Naval Medical Center Portsmouth (NMCP) COVID-19 Literature Report #96: Friday, 24 June 2022

Prepared By: Tracy C. Shields, MSIS, AHIP (Ms.; she/her) <tracy.c.shields2.civ@mail.mil>
Naval Medical Center Portsmouth; Library Services, Reference Medical Librarian

Purpose: These reports, published every other week on Fridays, are curated collections of current research, special reports, and news regarding the COVID-19 pandemic that may be of interest to medical providers, leadership, and decision makers.

All reports are available online at https://nmcp.libguides.com/covidreport. Access is private; you will need to use the direct link or bookmark the URL.

Disclaimer: I am not a medical professional. This document is current as of the date noted above. While I make every effort to find and summarize available data, I cannot cover everything in the literature on COVID-19. Due to the rapid evolution of the literature, I will not update past reports when new information arises; for retracted papers specific to COVID-19, see the list of retracted papers from Retraction Watch.

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A Brief Note and Request

The NMCP COVID-19 Literature Report has been produced for over 2 years. These reports take significant time and effort to produce. As the 100th issue approaches, I want to touch base with the people who read the reports and ask:

- What value do these report have to you? Have they made a difference in decision making or impacted patient care?
- Should these reports continue? If they do, how can they best support what you need?

I welcome your opinions, suggestions, or any other constructive feedback regarding these reports (email usn.hampton-roads.navhospporsva.list.nmcp-library@mail.mil). Thank you!

The Big Picture

News in Brief

"Universal health care could have saved more than 330,000 U.S. lives during COVID" (SciAm; see also: PNAS paper below).

Long Reads

"How COVID has deepened inequality — in six stark graphics. Troubling data show how the pandemic has exacted an unequal toll, pushing tens of millions into poverty and having the greatest effects on already-disadvantaged groups" (Nature).

Special Reports and Other Resources

GAO: Medical Countermeasure Development for Certain Serious or Life-Threatening Conditions (16 June 2022)

> "The Department of Health and Human Services' (HHS) Food and Drug Administration (FDA) established the Animal Rule in 2002 to allow for the approval of medical countermeasures based on animal efficacy studies when human clinical trials are not ethical or feasible. Medical countermeasures are medical products that may be used to prevent, treat, or mitigate potential health effects of exposure to chemical, biological, radiological, and nuclear (CBRN) agents. GAO found that FDA has undertaken efforts to provide information and feedback to developers to support medical countermeasure development under the Animal Rule. For example, in 2015 FDA issued guidance clarifying the types of studies and data needed to demonstrate product efficacy. FDA has approved 16 medical countermeasures under the Animal Rule, 14 of which were approved over the past decade."

JHCHS: Summary of Expert Insights for the US Department of Defense Biodefense Posture Review Meeting (09 June 2022)

"During the meeting, a variety of participants discussed two recurring recommendations:

1. The DoD, and the nation, would benefit from organizational realignment so that one person or office is responsible for biodefense policy across the DoD. This would help the Department to plan, build resources, and engage experts. Current efforts that shift responsibilities depending upon the nature of the health security crisis—for example if it is deliberate or natural, outside the contiguous US (OCONUS) or domestic—inhibit coherent planning.
2. Disinformation is a threat in all aspects of the biodefense posture, ranging from operational restrictions to reputational impacts on the United States. The DoD should routinely consider how its statements and actions can both enable and counter disinformation and take steps to minimize impact. Also, DoD should consider using its communications abilities to dissuade other nations from developing biological weapons."

Journal Articles

PNAS: Universal healthcare as pandemic preparedness: The lives and costs that could have been saved during the COVID-19 pandemic (13 June 2022)

"The fragmented and inefficient healthcare system in the United States leads to many preventable deaths and unnecessary costs every year. During a pandemic, the lives saved and economic benefits of a single-payer universal healthcare system relative to the status quo would be even greater. For Americans who are uninsured and underinsured, financial barriers to COVID-19 care delayed diagnosis and exacerbated transmission. Concurrently, deaths beyond COVID-19 accrued from the background rate of uninsurance. Universal healthcare would alleviate the mortality caused by the confluence of these factors. To evaluate the repercussions of incomplete insurance coverage in 2020, we calculated the elevated mortality attributable to the loss of employer-sponsored insurance and to background rates of uninsurance, summing with the increased COVID-19 mortality due to low insurance coverage. Incorporating the demography of the uninsured with age-specific COVID-19 and nonpandemic mortality, we estimated that a single-payer universal healthcare system would have saved about 212,000 lives in 2020 alone. We also calculated that US$105.6 billion of medical expenses associated with COVID-19 hospitalization could have been averted by a single-payer universal healthcare system over the course of the pandemic. These economic benefits are in addition to US$438 billion expected to be saved by single-payer universal healthcare during a nonpandemic year."

Beyond COVID

Mil Med: Hazardous Non-Combat Exposures in the U.S. Department of Defense (21 June 2022)

> "Hazardous non-combat exposures are inherent to military service and occur in three settings: installation workplaces, installation environments, and deployment environments. Few military clinicians receive training in how to recognize, assess, and manage patients with these exposures, and systems improvements are needed to support clinicians with respect to exposure recognition and management.
>
> This commentary highlights key concepts surrounding military non-combat exposures by discussing three case examples of exposures occurring in each of these settings. In the workplace, well-coordinated, interdisciplinary occupational health teams improve identification of exposure-related illnesses, and these teams may be further supported by the development of automated clinical decision-support systems. Installation environmental exposures are characterized by high perceived risk, uncertainty in estimating actual risk, and a wide range of stakeholders including military family members and individuals in the surrounding community.
>
> Recognizing environmental exposure concerns, gathering a thorough environmental exposure history, and practicing exposure risk communication are vital skills to address these situations. During deployments, exposures may initially be perceived as low risk but then become a concern years later. A functional understanding of the capabilities and limitations of exposure monitoring and potential health effects of exposures helps the military clinician effectively communicate potential health risks to line leaders. For any of these exposure settings, service public health centers and OEM specialty leaders and consultants are available for consultation."

COVID-19 Vaccines

News in Brief

"Moderna said its Omicron-targeting booster candidate for the fall induced 'potent' neutralizing antibody responses against the BA.4 and BA.5 subvariants" (Medpage; see also: Moderna press release).

Journal Articles

JAMA Intern Med: Comparative Safety of BNT162b2 and mRNA-1273 Vaccines in a Nationwide Cohort of US Veterans (13 June 2022)

> "Question: How do risks of adverse events compare after vaccination with BNT162b2 (Pfizer-BioNTech) vs mRNA-1273 (Moderna Inc) vaccines?
>
> Findings: In this cohort study of 433 672 US veterans during 38 weeks of follow-up, recipients of the BNT162b2 vaccine, compared with recipients of the mRNA-1273 vaccine, had an excess per 10 000 persons of 10.9 ischemic stroke events, 14.8 myocardial infarction events, 11.3 other thromboembolic events, and 17.1 kidney injury events. Small-magnitude differences between the 2 vaccines were seen within 42 days of the first dose, and few differences were seen within 14 days of the first dose.
>
> Meaning: This study's findings suggest that there were few differences in risk of adverse events within 14 days of the first dose of either the BNT162b2 or the mRNA-1273 vaccine and small-magnitude differences within 42 days and 38 weeks of the first dose."

Lancet: Risk of myocarditis and pericarditis after the COVID-19 mRNA vaccination in the USA: a cohort study in claims databases (11 June 2022)

> "Background: Several passive surveillance systems reported increased risks of myocarditis or pericarditis, or both, after COVID-19 mRNA vaccination, especially in young men. We used active surveillance from large health-care databases to quantify and enable the direct comparison of the risk of myocarditis or pericarditis, or both, after mRNA-1273 (Moderna) and BNT162b2 (Pfizer-BioNTech) vaccinations.
>
> Methods: We conducted a retrospective cohort study, examining the primary outcome of myocarditis or pericarditis, or both, identified using the International Classification of Diseases diagnosis codes, occurring 1-7 days post-vaccination, evaluated in COVID-19 mRNA vaccinees aged 18-64 years using health plan claims databases in the USA. Observed (O) incidence rates were compared with expected (E) incidence rates estimated from historical cohorts by each database. We used multivariate Poisson regression to estimate the adjusted incidence rates, specific to each brand of vaccine, and incidence rate ratios (IRRs) comparing mRNA-1273 and BNT162b2. We used meta-analyses to pool the adjusted incidence rates and IRRs across databases.
>
> Findings: A total of 411 myocarditis or pericarditis, or both, events were observed among 15 148 369 people aged 18-64 years who received 16 912 716 doses of BNT162b2 and 10 631 554 doses of mRNA-1273. Among men aged 18-25 years, the pooled incidence rate was highest after the second dose, at 1·71 (95% CI 1·31 to 2·23) per 100 000 person-days for BNT162b2 and 2·17 (1·55 to 3·04) per 100 000 person-days for mRNA-1273. The pooled IRR in the head-to-head comparison of the two mRNA vaccines was 1·43 (95% CI 0·88 to 2·34),

with an excess risk of 27·80 per million doses (-21·88 to 77·48) in mRNA-1273 recipients compared with BNT162b2.

Interpretation: An increased risk of myocarditis or pericarditis was observed after COVID-19 mRNA vaccination and was highest in men aged 18-25 years after a second dose of the vaccine. However, the incidence was rare. These results do not indicate a statistically significant risk difference between mRNA-1273 and BNT162b2, but it should not be ruled out that a difference might exist. Our study results, along with the benefit-risk profile, continue to support vaccination using either of the two mRNA vaccines."

Transmission, Exposure, and Surveillance

News in Brief

"How months-long COVID infections could seed dangerous new variants" (Nature).

"The bioethics and biosecurity aspects of targeted wastewater surveillance" (Global Biodefense).

Journal Articles

Clin Infect Dis: Viral dynamics of Omicron and Delta SARS-CoV-2 variants with implications for timing of release from isolation: a longitudinal cohort study (23 June 2022)

"Background: In January 2022, United States guidelines shifted to recommend isolation for 5 days from symptom onset, followed by 5 days of mask wearing. However, viral dynamics and variant and vaccination impact on culture conversion are largely unknown.

Methods: We conducted a longitudinal study on a university campus, collecting daily anterior nasal swabs for at least 10 days for RT-PCR and culture, with antigen rapid diagnostic testing (RDT) on a subset. We compared culture positivity beyond day 5, time to culture conversion, and cycle threshold trend when calculated from diagnostic test, from symptom onset, by SARS-CoV-2 variant, and by vaccination status. We evaluated sensitivity and specificity of RDT on days 4-6 compared to culture.

Results: Among 92 SARS-CoV-2 RT-PCR positive participants, all completed the initial vaccine series, 17 (18.5%) were infected with Delta and 75 (81.5%) with Omicron. Seventeen percent of participants had positive cultures beyond day 5 from symptom onset with the latest on day 12. There was no difference in time to culture conversion by variant

> or vaccination status. For 14 sub-study participants, sensitivity and specificity of day 4-6 RDT were 100% and 86% respectively.
>
> Conclusions: The majority of our Delta- and Omicron-infected cohort culture-converted by day 6, with no further impact of booster vaccination on sterilization or cycle threshold decay. We found that rapid antigen testing may provide reassurance of lack of infectiousness, though guidance to mask for days 6-10 is supported by our finding that 17% of participants remained culture positive after isolation."

NEJM: Neutralization Escape by SARS-CoV-2 Omicron Subvariants BA.2.12.1, BA.4, and BA.5 (22 June 2022)

> Letter to the editor: "We evaluated neutralizing antibody titers against the reference WA1/2020 isolate of SARS-CoV-2 along with omicron subvariants BA.1, BA.2, BA.2.12.1, and BA.4 or BA.5 in 27 participants who had been vaccinated and boosted with messenger RNA vaccine BNT162b2 (Pfizer–BioNTech) and in 27 participants who had been infected with the BA.1 or BA.2 subvariant a median of 29 days earlier….
>
> These data show that the BA.2.12.1, BA.4, and BA.5 subvariants substantially escape neutralizing antibodies induced by both vaccination and infection. Moreover, neutralizing antibody titers against the BA.4 or BA.5 subvariant and (to a lesser extent) against the BA.2.12.1 subvariant were lower than titers against the BA.1 and BA.2 subvariants, which suggests that the SARS-CoV-2 omicron variant has continued to evolve with increasing neutralization escape."

BMJ Open: Investigation of the use of a sensor bracelet for the presymptomatic detection of changes in physiological parameters related to COVID-19: an interim analysis of a prospective cohort study (COVI-GAPP) (21 June 2022)

> "Objectives: We investigated machine learning based identification of presymptomatic COVID-19 and detection of infection-related changes in physiology using a wearable device.
>
> Design: Interim analysis of a prospective cohort study.
>
> Setting, participants and interventions: Participants from a national cohort study in Liechtenstein were included. Nightly they wore the Ava-bracelet that measured respiratory rate (RR), heart rate (HR), HR variability (HRV), wrist-skin temperature (WST) and skin perfusion. SARS-CoV-2 infection was diagnosed by molecular and/or serological assays.
>
> Results: A total of 1.5 million hours of physiological data were recorded from 1163 participants (mean age 44±5.5 years). COVID-19 was confirmed in 127 participants of which, 66 (52%) had worn their device from baseline to symptom onset (SO) and were included in this analysis. Multi-level modelling revealed significant changes in five (RR, HR, HRV, HRV ratio and WST) device-measured physiological parameters during the incubation,

presymptomatic, symptomatic and recovery periods of COVID-19 compared with baseline. The training set represented an 8-day long instance extracted from day 10 to day 2 before SO. The training set consisted of 40 days measurements from 66 participants. Based on a random split, the test set included 30% of participants and 70% were selected for the training set. The developed long short-term memory (LSTM) based recurrent neural network (RNN) algorithm had a recall (sensitivity) of 0.73 in the training set and 0.68 in the testing set when detecting COVID-19 up to 2 days prior to SO.

Conclusion: Wearable sensor technology can enable COVID-19 detection during the presymptomatic period. Our proposed RNN algorithm identified 68% of COVID-19 positive participants 2 days prior to SO and will be further trained and validated in a randomised, single-blinded, two-period, two-sequence crossover trial."

Clin Infect Dis: SARS-CoV-2 Transmission Associated with an Indoor Music Event That Required Proof of Full Vaccination Against COVID-19 Prior to Entry-Seattle, July 2021 (20 June 2022)

"In July 2021, Public Health - Seattle and King County-investigated a COVID-19 outbreak at an indoor event intended for fully-vaccinated individuals, revealing unvaccinated staff, limited masking, poor ventilation, and overcrowding. Supporting businesses to develop and implement comprehensive COVID-19 prevention plans is essential for reducing spread in these settings."

Nature: BA.2.12.1, BA.4 and BA.5 escape antibodies elicited by Omicron infection (17 June 2022)

"SARS-CoV-2 Omicron sublineages BA.2.12.1, BA.4 and BA.5 exhibit higher transmissibility over BA.2. The new variants' receptor binding and immune evasion capability require immediate investigation. Here, coupled with Spike structural comparisons, we show that BA.2.12.1 and BA.4/BA.5 exhibit comparable ACE2-binding affinities to BA.2. Importantly, BA.2.12.1 and BA.4/BA.5 display stronger neutralization evasion than BA.2 against the plasma from 3-dose vaccination and, most strikingly, from post-vaccination BA.1 infections.

To delineate the underlying antibody evasion mechanism, we determined the escaping mutation profiles, epitope distribution and Omicron neutralization efficacy of 1640 RBD-directed neutralizing antibodies (NAbs), including 614 isolated from BA.1 convalescents. Interestingly, post-vaccination BA.1 infection mainly recalls wildtype-induced humoral memory. The resulting elicited antibodies could neutralize both wildtype and BA.1 and are enriched on non-ACE2-competing epitopes. However, most of these cross-reactive NAbs are heavily escaped by L452Q, L452R and F486V. BA.1 infection can also induce new clones of BA.1-specific antibodies that potently neutralize BA.1; nevertheless, these NAbs are largely escaped by BA.2/BA.4/BA.5 due to D405N and F486V, and react weakly to pre-Omicron variants, exhibiting poor neutralization breadths. As for therapeutic NAbs, Bebtelovimab and Cilgavimab can effectively neutralize BA.2.12.1 and BA.4/BA.5, while the S371F, D405N

> and R408S mutations would undermine most broad sarbecovirus NAbs. Together, our results indicate that Omicron may evolve mutations to evade the humoral immunity elicited by BA.1 infection, suggesting that BA.1-derived vaccine boosters may not achieve broad-spectrum protection against new Omicron variants."

Treatments and Management

News in Brief

"In standard-risk COVID-19 patients, nirmatrelvir/ritonavir (Paxlovid) failed to show a significant reduction in hospitalizations or death, with 5 events in the treatment arm and 10 in the placebo arm, Pfizer announced" (Medpage; see also: Pfizer press release).

"New COVID drugs face delays as trials grow more difficult" (Nature).

Journal Articles

MMWR: Dispensing of Oral Antiviral Drugs for Treatment of COVID-19 by Zip Code–Level Social Vulnerability — United States, December 23, 2021–May 21, 2022 (24 June 2022)

> "What is already known about this topic? Lagevrio and Paxlovid are oral antiviral drugs effective at preventing hospitalization and death in patients with mild to moderate COVID-19 who are at risk for progression to severe disease.
>
> What is added by this report? During December 23, 2021–May 21, 2022, 1,076,762 oral antiviral prescriptions were dispensed in the United States. The overall number of antivirals dispensed increased; however, by the end of the study period, dispensing rates were lowest in high vulnerability zip codes, despite these zip codes having the largest number of dispensing sites.
>
> What are the implications for public health practice? Additional public health, regulatory, and policy efforts might help decrease barriers to oral antiviral access, particularly in communities with high social vulnerability."

MMWR: Hospitalization and Emergency Department Encounters for COVID-19 After Paxlovid Treatment — California, December 2021–May 2022 (24 June 2022)

> "What is already known about this topic? Recurrence of COVID-19 symptoms and positive SARS-CoV-2 test results have been reported after completion of Paxlovid oral antiviral treatment for COVID-19, but real-world evidence of severe illness following Paxlovid is lacking.

What is added by this report? COVID-19–related hospital admissions and emergency department (ED) encounters occurring 5–15 days after Paxlovid treatment were described using data from a large integrated health care system. Reports of such hospitalizations or ED encounters occurred infrequently, representing <1% of Paxlovid-treated patients over the study period.

What are the implications for public health practice? When administered as an early-stage treatment, Paxlovid might prevent COVID-19–related hospitalization among persons with mild-to-moderate COVID-19 who are at risk for progression to severe disease."

Clin Infect Dis: Delayed Recognition of COVID-19 in New York City: A descriptive analysis of COVID-19 illness prior to February 29, 2020 (20 June 2022)

"Methods: Three-hundred-sixty persons with COVID-like illness were reported to the NYC Department of Health and Mental Hygiene (DOHMH) before February 29, but 37 of these tested negative and 237 were never tested for SARS-COV-2. Records of 86 persons with confirmed COVID-19 and reported symptom onset prior to February 29, 2020, were reviewed by four physician-epidemiologists. Case-patients were classified as possible delayed recognition (PDR) of COVID-19 when upon medical review the reported onset date was believed to reflect the initial symptoms of COVID-19, or insufficient evidence to classify, when the onset could not be determined with confidence. Clinical and epidemiological factors collected by DOHMH and supplemented with emergency department records were analyzed.

Results: Thirty-nine PDR COVID-19 cases were identified. The majority had severe disease with 69% presenting to an ED visit within 2 weeks of symptom onset. The first PDR COVID-19 case had symptom onset on January 28, 2020. Only 7 of the 39 cases (18%) had traveled internationally within 14 days of onset (none to China).

Conclusions: COVID-19 was in NYC before being classified as a PHEIC, and eluded surveillance for another month. The delay in recognition limited mitigation efforts; by the time city and state-wide mandates were enacted,16 and 22 days later, there was already widespread community transmission."

MMWR: COVID-19 Cases and Hospitalizations Among Medicare Beneficiaries With and Without Disabilities — United States, January 1, 2020–November 20, 2021 (17 June 2022)

"What is already known about this topic? Persons with disabilities are at high risk for severe outcomes from COVID-19, including death.

What is added by this report? COVID-19–associated hospitalization rates among disability-eligible Medicare beneficiaries (3,148 per 100,000) were approximately 50% higher than rates among age-eligible (i.e., ≥65 years) beneficiaries (2,129 per 100,000), and hospitalization rates increased by age in both groups. Among persons with disabilities,

American Indian or Alaska Native persons experienced the highest rate of COVID-19–associated hospitalization (4,962 per 100,000).

What are the implications for public health practice? Efforts to increase access to and implementation of COVID-19 prevention and treatment strategies, including vaccination, are critical to reducing severe COVID-19–associated outcomes among persons with disabilities."

J Card Fail: Association of Reduced Hospitalizations and Mortality Among COVID-19 Vaccinated Patients with Heart Failure (06 June 2022)

"Background: Patients with Heart Failure (HF) are at high risk for adverse outcomes with COVID-19. Reports of COVID-19 vaccine-related cardiac complications may contribute to vaccine hesitancy in patients with heart failure (HF).

Methods: To analyze the impact of COVID-19 vaccine status on clinical outcomes in patients with HF, we conducted a retrospective cohort study on the association of COVID-19 vaccination status with hospitalizations, ICU admission, and mortality after adjustment for covariates. Inverse probability treatment weighted (IPTW) models were used to adjust for potential confounding.

Results: Among 7094 patients with HF, 645 (9.1%) were partially vaccinated, 2,200 (31.0%) fully vaccinated, 1,053 vaccine-boosted (14.8%), and 3,196 remained unvaccinated (45.1%) by January 2022. The mean age was 73.3 ± 14.5 years, with 48% female. Lower mortality was observed among patients who were vaccine-boosted followed by those who were fully vaccinated experienced lower mortality (HRs 0.33 (CI 0.23, 0.48) and 0.36 (CI 0.30, 0.43), respectively, compared to unvaccinated individuals, $p<0.001$) over the mean follow up time of 276.5 ± 104.9 days, while no difference was observed between those who were unvaccinated or only partially vaccinated.

Conclusion/relevance: COVID-19 vaccination was associated with significant reduction in all-cause hospitalization rates and mortality, lending further evidence to support the importance of its implementation in the high-risk population of patients living with HF."

Breakthrough Infections, Reinfections, and Coinfections

Journal Articles

Emerg Infect Dis: Early SARS-CoV-2 Reinfections within 60 Days and Implications for Retesting Policies (23 June 2022)

> "Illustrated by a clinical case supplemented by epidemiologic data, early reinfections with SARS-CoV-2 Omicron BA.1 after infection with Delta variant, and reinfection with Omicron BA.2 after Omicron BA.1 infection, can occur within 60 days, especially in young, unvaccinated persons. The case definition of reinfection, which influences retesting policies, should be reconsidered."

Clin Infect Dis: Virologic and Immunologic Characterization of COVID-19 Recrudescence after Nirmatrelvir/Ritonavir Treatment (20 June 2022)

> "We isolated a SARS-CoV-2 BA.2 variant from a person with COVID-19 recrudescence after nirmatrelvir/ritonavir treatment. Antiviral sensitivity and neutralizing antibody testing were performed with both parental SARS-CoV-2 and multiple variants of concern. We found that neither NM resistance nor absence of neutralizing immunity were likely causes of the recrudescence."

Clin Infect Dis: Increased deaths from fungal infections during the COVID-19 pandemic-National Vital Statistics System, United States, January 2020-December 2021 (19 June 2022)

> "Background: COVID-19-associated fungal infections cause severe illness, but comprehensive data on disease burden are lacking. We analyzed US National Vital Statistics System (NVSS) data to characterize disease burden, temporal trends, and demographic characteristics of persons dying from fungal infections during the COVID-19 pandemic.
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> Methods: Using NVSS's January 2018-December 2021 Multiple Cause of Death Database, we examined numbers and age-adjusted rates (per 100,000 population) of fungal deaths by fungal pathogen, COVID-19 association, demographic characteristics, and year.
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> Results: Numbers and age-adjusted rates of fungal deaths increased from 2019 (n = 4,833, rate 1.2, 95% confidence interval [CI] 1.2-1.3) to 2021 (n = 7,199, rate: 1.8, 95% CI = 1.8-1.8); of 13,121 fungal deaths during 2020-2021, 2,868 (21.9%) were COVID-19-associated. Compared with non-COVID-19-associated fungal deaths (n = 10,253), COVID-19-associated fungal deaths more frequently involved Candida (n = 776 [27.1%] versus n = 2,432 [23.7%]) and Aspergillus (n = 668 [23.3%] versus n = 1,486 [14.5%]) and less frequently involved other specific fungal pathogens. Fungal death rates were generally highest in non-White and non-Asian populations. Death rates from Aspergillus infections were approximately two times higher in the Pacific US census division compared with most other divisions.

Conclusions: Fungal deaths increased during 2020-2021 compared with previous years, primarily driven by COVID-19-associated fungal deaths, particularly those involving Aspergillus and Candida. Our findings may inform efforts to prevent, identify, and treat severe fungal infections in COVID-19 patients, especially in certain racial/ethnic groups and geographic areas."

NEJM: Effects of Previous Infection and Vaccination on Symptomatic Omicron Infections (15 June 2022)

"Background: The protection conferred by natural immunity, vaccination, and both against symptomatic severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection with the BA.1 or BA.2 sublineages of the omicron (B.1.1.529) variant is unclear.

Methods: We conducted a national, matched, test-negative, case-control study in Qatar from December 23, 2021, through February 21, 2022, to evaluate the effectiveness of vaccination with BNT162b2 (Pfizer-BioNTech) or mRNA-1273 (Moderna), natural immunity due to previous infection with variants other than omicron, and hybrid immunity (previous infection and vaccination) against symptomatic omicron infection and against severe, critical, or fatal coronavirus disease 2019 (Covid-19).

Results: The effectiveness of previous infection alone against symptomatic BA.2 infection was 46.1% (95% confidence interval [CI], 39.5 to 51.9). The effectiveness of vaccination with two doses of BNT162b2 and no previous infection was negligible (-1.1%; 95% CI, -7.1 to 4.6), but nearly all persons had received their second dose more than 6 months earlier. The effectiveness of three doses of BNT162b2 and no previous infection was 52.2% (95% CI, 48.1 to 55.9). The effectiveness of previous infection and two doses of BNT162b2 was 55.1% (95% CI, 50.9 to 58.9), and the effectiveness of previous infection and three doses of BNT162b2 was 77.3% (95% CI, 72.4 to 81.4). Previous infection alone, BNT162b2 vaccination alone, and hybrid immunity all showed strong effectiveness (>70%) against severe, critical, or fatal Covid-19 due to BA.2 infection. Similar results were observed in analyses of effectiveness against BA.1 infection and of vaccination with mRNA-1273.

Conclusions: No discernable differences in protection against symptomatic BA.1 and BA.2 infection were seen with previous infection, vaccination, and hybrid immunity. Vaccination enhanced protection among persons who had had a previous infection. Hybrid immunity resulting from previous infection and recent booster vaccination conferred the strongest protection."

Long COVID and Other Post-Infectious Findings

News in Brief

"How common is long COVID? Why studies give different answers" (Nature).

"Long COVID could be a 'mass deterioration event' — A tidal wave of chronic illness could leave millions of people incrementally worse off" (Atlantic).

"COVID and smell loss: answers begin to emerge" (Nature).

"Understanding long Covid will take the lived experiences of long haulers" (STAT).

"Over one-third of adults in the United States who have had COVID-19 in the past have also had 'long COVID'" (CDC).

Long Reads

"Clues to long COVID — Scientists strive to unravel what is driving disabling symptoms" (Science).

"44% of Americans aren't financially prepared for long COVID" (PolicyGenius).

Journal Articles

Curr Med Res Opin: Sex differences in sequelae from COVID-19 infection and in long COVID syndrome: a review (20 June 2022)

> "Objective: We conducted literature reviews to uncover differential effects of sex on sequelae from coronavirus disease 2019 (COVID-19) and on long COVID syndrome.
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> Methods: Two authors independently searched OvidSP in Embase, Medline, Biosis, and Derwent Drug File. Publications reporting original, sex-disaggregated data for sequelae of COVID-19 (published before August 2020) and long COVID syndrome (published before June 2021) were included in the reviews. The association between COVID-19 sequelae (i.e. lasting <4 weeks after symptom onset) and sex, and between long COVID syndrome (i.e. lasting >4 weeks after symptom onset) and sex, was determined by odds ratio (OR) and 95% confidence interval (CI) (statistical significance defined by 95% CI not including 1).
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> Results: Of 4346 publications identified, 23 and 12 met eligibility criteria for COVID-19 sequelae and long COVID syndrome, respectively. COVID-19 sequelae in the categories of psychiatric/mood (OR = 1.80; 95% CI: 1.35-2.41), ENT (OR = 1.42; 95% CI: 1.39-1.46), musculoskeletal (OR = 1.15; 95% CI: 1.14-1.16), and respiratory (OR = 1.09; 95% CI: 1.08-1.11) were significantly more likely among females (vs. males), whereas renal sequelae (OR = 0.83; 95% CI: 0.75-0.93) were significantly more likely among males. The likelihood of

> having long COVID syndrome was significantly greater among females (OR = 1.22; 95% CI: 1.13-1.32), with the odds of ENT (OR = 2.28; 95% CI: 1.94-2.67), GI (OR = 1.60; 95% CI: 1.04-2.44), psychiatric/mood (OR = 1.58; 95% CI: 1.37-1.82), neurological (OR = 1.30; 95% CI: 1.03-1.63), dermatological (OR = 1.29; 95% CI: 1.05-1.58), and other (OR = 1.36; 95% CI: 1.25-1.49) disorders significantly higher among females and the odds of endocrine (OR = 0.75; 95% CI: 0.69-0.81) and renal disorders (OR = 0.74; 95% CI: 0.64-0.86) significantly higher among males.
>
> Conclusions: Sex-disaggregated differences for COVID-19 sequelae and long COVID syndrome were observed. Few COVID-19 studies report sex-disaggregated data, underscoring the need for further sex-based research/reporting of COVID-19 disease."

Lancet: Risk of long COVID associated with delta versus omicron variants of SARS-CoV-2 (18 June 2022)

> In this case-control observational study, we set out to identify the relative odds of long-COVID (defined following the National Institute for Health and Care Excellence guidelines as having new or ongoing symptoms 4 weeks or more after the start of acute COVID-19) in the UK during the omicron period compared with the delta period. We used self-reported data from the COVID Symptom Study app."

Clin Microbiol Infect: Symptoms Persist in Patients Two Years after COVID-19 infection: A Prospective Follow Up Study (17 June 2022)

> Letter to the editor: "To our knowledge this is the first US study to describe the duration and symptomatology of COVID-19 in patients over a two year follow up period. Most patients had reduction and resolution in their symptoms over the two year period, however nearly a quarter of patients still experience persistent symptoms."

Ann Clin Transl Neurol: Longitudinal evaluation of neurologic-post acute sequelae SARS-CoV-2 infection symptoms (15 June 2022)

> "Objective: To assess the initial features and evolution of neurologic Postacute Sequelae of SARS-CoV-2 infection (neuro-PASC) in patients with and without prior neurologic disease.
>
> Methods: Participants with neurologic symptoms following acute SARS-CoV-2 infection were recruited from October 9, 2020 to October 11, 2021. Clinical data included a SARS-CoV-2 infection history, neurologic review of systems, neurologic exam, Montreal cognitive assessment (MoCA), and symptom-based self-reported surveys at baseline (conducted after acute infection) and 6-month follow-up assessments.
>
> Results: Fifty-six participants (69% female, mean age 50 years, 29% with prior neurologic disease such as multiple sclerosis) were enrolled, of which 27 had completed the 6-month follow-up visit in this ongoing study. SARS-CoV-2 infection severity was largely described as

mild (39.3%) or moderate (42.9%). At baseline, following acute infection, the most common neurologic symptoms were fatigue (89.3%) and headaches (80.4%). At the 6-month follow-up, memory impairment (68.8%) and decreased concentration (61.5%) were the most prevalent, though on average all symptoms showed a reduction in reported severity score at the follow-up. Complete symptom resolution was reported in 33.3% of participants by 6 months. From baseline to 6 months, average MoCA scores improved overall though 26.3% of participants' scores decreased. A syndrome consisting of tremor, ataxia, and cognitive dysfunction (PASC-TAC) was observed in 7.1% of patients.

Interpretation: Early in the neuro-PASC syndrome, fatigue and headache are the most commonly reported symptoms. At 6 months, memory impairment and decreased concentration were most prominent. Only one-third of participants had completed resolution of neuro-PASC at 6 months, although persistent symptoms trended toward improvement at follow-up."

Ann Med Surg: Post-acute COVID-19 syndrome and its prolonged effects: An updated systematic review (15 June 2022)

"Objective: This systematic review aimed at estimating the prevalence of post-acute COVID-19 symptoms in view of published literature that studied prolonged clinical manifestations after recovery from acute COVID-19 infection.

Methods: Relevant databases were searched for extraction of articles. For data synthesis, based on the distribution of quantitative variables, they were expressed as mean ± standard deviation (SD) or median and interquartile range (IQR). Qualitative variables were presented as frequency (n) and percentages (%).

Results: Twenty-one articles qualified for the final analysis. The most common persistent clinical manifestations were fatigue (54.11%), dyspnea (24.38%), alopecia (23.21%), hyperhidrosis (23.6%), insomnia (25.98%), anxiety (17.29%), and arthralgia (16.35%). In addition to these symptoms, new-onset hypertension, diabetes, neuropsychiatric disorders, and bladder incontinence were also reported.

Conclusion: Clinical features of post-acute COVID-19 infection can manifest even after 60 days of initial infection. Multidisciplinary care along with regular follow-up must be provided to such patients."

Infect Disord Drug Targets: Postural orthostatic tachycardia syndrome and orthostatic hypotension post COVID-19 (10 June 2022)

"Background: Novel coronavirus causes coronavirus disease -19 (COVID-19). The hallmark is acute respiratory distress syndrome, but other system's involvement is less illustrated. Our goal was to evaluate the manifestation of COVID-19 on one of the overlaps of the

cardiovascular and nervous system, namely: Postural Orthostatic Tachycardia Syndrome (POTS) and Orthostatic Hypotension (OH).

Methods: This single-center cross-sectional observational study encompassed 60 consecutive patients that were hospitalized and recovered from severe or critical COVID-19. At the time of discharge, Blood Pressure (BP), Heart Rate (HR) in the supine and upright position (1st, 3rd, 5th and 10th minutes) were measured. Symptomatic patients were reevaluated 2 months later.

Results: The mean age of patients was 56.6 (±16.2) years and 42 patients were male (70%). The most frequent cardiovascular risk factor was hypertension (35%). OH and POTS were detected in 29(48.3%) and 10(16.7%) of the patients respectively at the time of hospital discharge. The mean age of patients with OH was higher than POTS and POTS was frequent in the elderly. Two months later among 10 patients with POTS, the sign and symptoms were resolved in 8(80%). Two (20%) patients who still had positive signs and symptoms of POTS were older than 65 years. Among 29 patients with OH, the signs and symptoms were resolved in 26(89.7%).

Conclusion: In our study 65% of patients had OH or POTs on the day of hospital discharge, Complete recovery is gradual and needs several additional weeks. This is one of the aspects of the entity recently named "Long COVID"."

J Neuropsychiatry Clin Neurosci: Post-Acute Sequelae of SARS-CoV-2 Infection: A Descriptive Clinical Study (10 June 2022)

"Objective: The investigators aimed to describe the clinical experience of a single center reporting on neuropsychiatric findings among patients experiencing persistent symptoms as part of post-acute sequelae of SARS-CoV-2 (PASC) infection.

Methods: Data were collected retrospectively (between February 2020 and May 2021) from a cohort (N=100) within a COVID-19 survivors study of patients with persistent symptoms enrolled after a short inpatient stay or who had been outpatients never hospitalized. Patients without confirmatory positive PCR or antibody diagnostic test results were grouped separately as presumptive cases (N=13).

Results: Of the 87 patients with confirmed SARS-CoV-2, 63 (72.4%) were female, and 65 (74.7%) were White. The mean age was 49.2 years (SD=14.9). The most prevalent symptoms after COVID-19 infection were fatigue, "brain fog," headache, anxiety, and sleep issues. Attention and executive function were frequently impaired. The mean Montreal Cognitive Assessment score was 26.0 (SD=2.8). Concentration and attention as well as memory issues were both significantly correlated with the complaint of brain fog.

Conclusions: These preliminary findings suggest that post-acute sequelae of SARS-CoV-2 vary in frequency and duration with relation to premorbid history and that these conditions

affect functional domains and patients' ability to return to work. Longitudinal research with larger cohorts is needed to characterize PASC and to optimize care, especially for vulnerable populations."

PLoS One: Comprehensive clinical assessment identifies specific neurocognitive deficits in working-age patients with long-COVID (10 June 2022)

"Introduction: There have been more than 425 million COVID-19 infections worldwide. Post-COVID illness has become a common, disabling complication of this infection. Therefore, it presents a significant challenge to global public health and economic activity.

Methods: Comprehensive clinical assessment (symptoms, WHO performance status, cognitive testing, CPET, lung function, high-resolution CT chest, CT pulmonary angiogram and cardiac MRI) of previously well, working-age adults in full-time employment was conducted to identify physical and neurocognitive deficits in those with severe or prolonged COVID-19 illness.

Results: 205 consecutive patients, age 39 (IQR30.0-46.7) years, 84% male, were assessed 24 (IQR17.1-34.0) weeks after acute illness. 69% reported ≥3 ongoing symptoms. Shortness of breath (61%), fatigue (54%) and cognitive problems (47%) were the most frequent symptoms, 17% met criteria for anxiety and 24% depression. 67% remained below pre-COVID performance status at 24 weeks. One third of lung function tests were abnormal, (reduced lung volume and transfer factor, and obstructive spirometry). HRCT lung was clinically indicated in <50% of patients, with COVID-associated pathology found in 25% of these. In all but three HRCTs, changes were graded 'mild'. There was an extremely low incidence of pulmonary thromboembolic disease or significant cardiac pathology. A specific, focal cognitive deficit was identified in those with ongoing symptoms of fatigue, poor concentration, poor memory, low mood, and anxiety. This was notably more common in patients managed in the community during their acute illness.

Conclusion: Despite low rates of residual cardiopulmonary pathology, in this cohort, with low rates of premorbid illness, there is a high burden of symptoms and failure to regain pre-COVID performance 6-months after acute illness. Cognitive assessment identified a specific deficit of the same magnitude as intoxication at the UK drink driving limit or the deterioration expected with 10 years ageing, which appears to contribute significantly to the symptomatology of long-COVID."

Sci Rep: "Long COVID" results after hospitalization for SARS-CoV-2 infection (10 June 2022)

"Long-term sequelae of symptomatic infection caused by SARS-CoV-2 are largely undiscovered. We performed a prospective cohort study on consecutively hospitalized Sars-CoV-2 patients (March-May 2020) for evaluating COVID-19 outcomes at 6 and 12 months. After hospital discharge, patients were addressed to two follow-up pathways based on

respiratory support needed during hospitalization. Outcomes were assessed by telephone consultation or ambulatory visit. Among 471 patients, 80.9% received no respiratory support during hospitalization; 19.1% received non-invasive ventilation (NIV) or invasive mechanical ventilation (IMV). 58 patients died during hospitalization, therefore 413 were enrolled for follow-up. At 6 months, among 355 patients, the 30.3% had any symptoms, 18.0% dyspnea, 6.2% neurological symptoms. Fifty-two out of 105 had major damages in interstitial computed tomography images. NIV/IMV patients had higher probability to suffer of symptoms (aOR = 4.00, 95%CI:1.99-8.05), dyspnea (aOR = 2.80, 95%CI:1.28-6.16), neurological symptoms (aOR = 9.72, 95%CI:2.78-34.00). At 12 months, among 344, the 25.3% suffered on any symptoms, 12.2% dyspnea, 10.1% neurological symptoms. Severe interstitial lesions were present in 37 out of 47 investigated patients. NIV/IMV patients in respect to no respiratory support, had higher probability of experiencing symptoms (aOR = 3.66, 95%CI:1.73-7.74), neurological symptoms (aOR = 8.96, 95%CI:3.22-24.90). COVID-19 patients showed prolonged sequelae up to 12 months, highlighting the need of follow-up pathways for post-COVID-19 syndrome."

Vaccine: The effect of SARS-CoV-2 vaccination on post-acute sequelae of COVID-19 (PASC): A prospective cohort study (07 June 2022)

"Background: Symptoms of post-acute sequelae of COVID-19 (PASC) may improve following SARS-CoV-2 vaccination. However few prospective data that also explore the underlying biological mechanism are available. We assessed the effect of vaccination on symptomatology of participants with PASC, and compared antibody dynamics between those with and without PASC.

Methods: RECoVERED is a prospective cohort study of adult patients with mild to critical COVID-19, enrolled from illness onset. Among participants with PASC, vaccinated participants were exact-matched 1:1 on age, sex, obesity status and time since illness onset to unvaccinated participants. Between matched pairs, we compared the monthly mean numbers of symptoms over a 3-month follow-up period, and, using exact logistic regression, the proportion of participants who fully recovered from PASC. Finally, we assessed the association between PACS status and rate of decay of spike- and RBD-binding IgG titers up to 9 months after illness onset using Bayesian hierarchical linear regression.

Findings: Of 349 enrolled participants, 316 (90.5%) had ≥3 months of follow-up, of whom 186 (58.9%) developed PASC. Among 36 matched pairs with PASC, the mean number of symptoms reported each month during 3 months of follow-up were comparable between vaccinated and unvaccinated groups. Odds of full recovery from PASC also did not differ between matched pairs (OR 1.57 [95%CI 0.46-5.84]) within 3 months after the matched time-point. The median half-life of spike- and RBD-binding IgG levels were, in days (95%CrI), 233 (183-324) and 181 (147-230) among participants with PASC, and 170 (125-252) and 144 (113-196) among those without PASC, respectively.

Interpretation: Our study found no strong evidence to suggest that vaccination improves symptoms of PASC. This was corroborated by comparable spike- and RBD-binding IgG waning trajectories between those with and without PASC, refuting any immunological basis for a therapeutic effect of vaccination on PASC."

Pregnancy, Postpartum Period, and Women's Health

News in Brief

"Life disruptions and the stresses of the COVID-19 pandemic led to disturbed ovulation with decreased progesterone durations or levels, according to research being presented Sunday [12 June 2022] at ENDO 2022, the Endocrine Society's annual meeting in Atlanta" (EurekAlert).

Journal Articles

JAMA Netw Open: Racial and Ethnic Disparities in Postpartum Care in the Greater Boston Area During the COVID-19 Pandemic (23 June 2022)

"Question: How did postpartum care access change during the COVID-19 pandemic, and were these changes different by maternal race and ethnicity?

Findings: In this cohort study of 45 588 women, the overall postpartum care attendance rate decreased from 75.2% in January to December 2019 (prepandemic) to 41.7% in January to March 2020 (early pandemic) and subsequently rebounded to 60.9% in April 2020 to November 2021 (late pandemic). Black and Hispanic women showed slower reductions in nonscheduling rates during April 2020 to November 2021 compared with their White counterparts.

Meaning: The study highlights racial and ethnic disparities in postpartum care access both before and after the onset of the pandemic, raising concerns about disparities in postpartum care–associated maternal and infant outcomes."

NEJM: Evaluation of Acute Adverse Events after Covid-19 Vaccination during Pregnancy (22 June 2022)

Letter to the editor: "We identified 45,232 pregnant women who had received one or two doses of a Covid-19 vaccine immediately preceding or during pregnancy (78,026 vaccine doses) (Fig. S1). Of these women, 32,794 (72.5%) had received two doses of an mRNA vaccine, 5652 (12.5%) had received only the first dose of an mRNA vaccine, 4912 (10.9%)

had received only the second dose of an mRNA vaccine, and 1874 (4.1%) had received a single dose of the Ad26.COV2.S vaccine (Johnson & Johnson–Janssen)….

Frequencies of all medically attended acute adverse events were less than 1%. Among vaccinees, the most common events were fever (adjusted rate ratio as compared with unvaccinated controls, 2.85; 95% confidence interval [CI], 1.76 to 4.61), malaise or fatigue (adjusted rate ratio, 2.24; 95% CI, 1.71 to 2.93), local reactions (adjusted rate ratio, 1.89; 95% CI, 1.33 to 2.68), and lymphadenopathy or lymphadenitis (adjusted rate ratio, 2.16; 95% CI, 1.42 to 3.28)….

Medically attended acute adverse events after Covid-19 vaccination immediately preceding or during pregnancy were uncommon."

Clin Infect Dis: COVID-19 Severity among Women of Reproductive Age with Symptomatic Laboratory-Confirmed SARS-CoV-2 by Pregnancy Status – United States, Jan 1, 2020 – Dec 25, 2021 (19 June 2022)

"Background: Information on the severity of COVID-19 attributable to the Delta variant in the United States among pregnant people is limited. We assessed the risk for severe COVID-19 by pregnancy status in the period of Delta variant predominance compared with the pre-Delta period.

Methods: Laboratory-confirmed SARS-CoV-2 infections among symptomatic women of reproductive age (WRA) were assessed. We calculated adjusted risk ratios for severe disease including intensive care unit (ICU) admission, receipt of invasive ventilation or extracorporeal membrane oxygenation (ECMO), and death comparing the pre-Delta period (January 1, 2020 - June 26, 2021) and the Delta period (June 27, 2021 - December 25, 2021) for pregnant and nonpregnant WRA.

Results: Compared with the pre-Delta period, the risk of ICU admission during the Delta period was 41% higher (adjusted risk ratio [aRR] 1.41; 95% CI, 1.17-1.69) for pregnant WRA and 9% higher (aRR 1.09; 95% CI, 1.00-1.18) for nonpregnant WRA. The risk of invasive ventilation or ECMO was higher for pregnant (aRR 1.83; 95% CI, 1.26-2.65) and nonpregnant WRA (aRR 1.34; 95% CI, 1.17-1.54) in the Delta period. During the Delta period, the risk of death was 3.33 (95% CI, 2.48-4.46) times the risk in the pre-Delta period among pregnant WRA and 1.62 (95% CI, 1.49-1.77) among nonpregnant WRA.

Conclusions: Compared with the pre-Delta period, pregnant and nonpregnant WRA were at increased risk for severe COVID-19 in the Delta period."

Clin Infect Dis: Kinetics of maternally-derived anti- SARS-CoV-2 antibodies in infants in relation to the timing of antenatal vaccination (19 June 2022)

> "Background: SARS-CoV-2 infection during early infancy can result in severe disease. We evaluated the durability of maternally-derived anti-SARS-CoV-2 antibodies in infants and its relation to antenatal vaccination timing.
>
> Methods: Sera were prospectively collected at birth and 3 months after delivery from mother-infant pairs following antenatal BNT162b2 vaccination. SARS-CoV-2 receptor binding domain (RBD)-specific IgG levels and neutralizing activity were evaluated.
>
> Results: 56 mother-infant pairs were included: 15 (26.8%) were vaccinated in the 1st trimester, 16 (28.6%) in the 2nd trimester, and 25 (44.6%) in the 3rd trimester.At the time of delivery, all neonates were positive for anti-RBD-specific IgG with a median concentration of 4046 [IQR 2446-7896] AU/mL, with the highest concentration found after 3rd trimester vaccination (median 6763 [IQR 3857-12561] AU/mL). At 3 months after delivery, anti RBD-specific IgG levels in infants significantly waned with a median concentration of 545 [IQR 344-810] AU/mL ($P < 0.001$). The half-life of anti-RBD-specific IgG was 66 days among mothers and 30 days among infants. While at the time of delivery, all neonates had detectable neutralizing activity regardless of gestational age at vaccination, at 3-months of age, a higher proportion of infants born to mothers vaccinated in 3rd trimester had persistent neutralizing activity as compared to those born to mothers vaccinated in 2nd trimester.
>
> Conclusions: Maternal vaccination leads to efficient transplacental antibody transfer, with persistent anti-SARS-CoV-2 antibodies detected at 3 months of age in all infants. The observed effect of antenatal immunization timing on the kinetics of maternally-derived antibodies may have implications for SARS-CoV-2 vaccination strategies."

Pediatric Population

News in Brief

COVID vaccines for the youngest kiddos: the FDA issued emergency use authorization for Pfizer (6 months to 4 years) and Moderna (6 months to 5 years) vaccines (STAT) and the CDC adds its recommendation (STAT).

"Comparing the Pfizer and Moderna Covid vaccines for young children" (STAT).

Webinars and Other Events

WHAT: Recommendations for Pfizer-BioNTech and Moderna COVID-19 Vaccine Primary Series in Children 6 Months through 5 Years Old

WHEN: Wednesday, 22 June 2022 (recorded)

OVERVIEW: "While children have a lower risk for severe COVID-19 compared to adults, they can get COVID-19, spread it to others, and become seriously ill. COVID-19 vaccination provides protection to children and adolescents against severe illness and outcomes associated with COVID-19, including emergency department or urgent care visits, hospitalizations, and death. During this COCA Call, presenters will discuss CDC's new guidance on the pediatric COVID-19 vaccine primary series for children ages 6 months through 4 years old for Pfizer-BioNTech and ages 6 months through 5 years old for Moderna, including children who are moderately or severely immunocompromised."

MORE INFO: https://emergency.cdc.gov/coca/calls/2022/callinfo_062222.asp

Journal Articles

Clin Infect Dis: SARS-CoV-2 co-detection with influenza A and other respiratory viruses among school-aged children and their household members- March 12, 2020, to February 22, 2022, Dane County, Wisconsin (23 June 2022)

> "Background: Concurrent detection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and another respiratory virus in individuals can document contemporaneous circulation. We used an ongoing, community-based study of school-aged children and their households to evaluate SARS-CoV-2 co-detections with other respiratory viruses in a non-medically attended population over a two-year period.
>
> Methods: Household enrollment was predicated on an acute respiratory illness in a child residing in that household who was also a kindergarten through 12th grade student in the participating school district. Demographic, symptom and household composition data, and self-collected nasal specimens were obtained on the recruitment day, and 7 and 14 days later, from the index child and all other household members. All specimens were tested for SARS-CoV-2/influenza A/B by RT-PCR. Day 0 specimens from the index children were simultaneously tested for 17 viruses using a commercial respiratory pathogen panel (RPP). To assess viral co-detections involving SARS-CoV-2, all household specimens were tested via RPP if the index child's Day 0 specimen tested positive to any of the 17 viral targets in RPP and any household member tested positive for SARS-CoV-2.

Results: Of 2,109 participants (497 index children in 497 households with 1,612 additional household members), two (0.1%) were positive for both SARS-CoV-2 and influenza A; an additional 11 (0.5%) were positive for SARS-CoV-2 and another RPP-covered respiratory virus. Co-detections predominantly affected school-aged children (12 out of 13 total) and were noted in 11 of 497 households.

Conclusions: SARS-CoV-2 co-detections with other respiratory viruses were uncommon and predominated in school-aged children."

Lancet Child Adolesc Health: Long COVID symptoms in SARS-CoV-2-positive children aged 0–14 years and matched controls in Denmark (LongCOVIDKidsDK): a national, cross-sectional study (22 June 2022)

"Background: After the acute phase of SARS-CoV-2 infection, children can develop long COVID symptoms. We aimed to investigate the prevalence of long-lasting symptoms, the duration and intensity of symptoms, quality of life, number of sick days and absences from daycare or school, and psychological and social outcomes in children aged 0–14 years who had been infected with SARS-CoV-2 relative to controls with no history of SARS-CoV-2 infection.

Methods: A nationwide cross-sectional study was conducted including children with a confirmed SARS-CoV-2-positive PCR test (cases) and matched controls from Danish national registers. A survey was sent to mothers (proxy reporting) of children aged 0–14 years who had had a positive SARS-CoV-2 test between Jan 1, 2020, and July 12, 2021, and a control group matched (1:4) by age and sex. The survey included the Pediatric Quality of Life Inventory (PedsQL) and the Children's Somatic Symptoms Inventory-24 (CSSI-24) to capture current overall health and wellbeing, and ancillary questions about the 23 most common long COVID symptoms. Descriptive statistics and logistic regression analysis were used. Clinically relevant differences were defined as those with a Hedges' g score greater than 0·2. This study is registered at ClinicalTrials.gov (NCT04786353).

Findings: Responses to the survey were received from 10 997 (28·8%) of 38 152 cases and 33 016 (22·4%) of 147 212 controls between July 20, 2021, and Sept 15, 2021. Median age was 10·2 years (IQR 6·6–12·8) in cases and 10·6 years (6·9–12·9) in controls. 5267 (48·2%) cases and 15 777 (48·3%) controls were female, and 5658 (51·8%) cases and 16 870 (51·7%) controls were male. Cases had higher odds of reporting at least one symptom lasting more than 2 months than did controls in the 0–3 years age group (478 [40·0%] of 1194 vs 1049 [27·2%] of 3855; OR 1·78 [95% CI 1·55–2·04], p<0·0001), 4–11 years age group (1912 [38·1%] of 5023 vs 6189 [33·7%] of 18 372; 1·23 [1·15–1·31], p<0·0001), and 12–14 years age group (1313 [46·0%] of 2857 vs 4454 [41·3%] of 10 789; 1·21 [1·11–1·32], p<0·0001). Differences in CSSI-24 symptom scores between cases and controls were statistically significant but not clinically relevant. Small clinically relevant differences in PedsQL quality-

of-life scores related to emotional functioning were found in favour of cases in the children aged 4–11 years (median score 80·0 [IQR 65·0–95·0]) in cases vs 75·0 [60·0–85·0] in controls; p<0·0001) and 12–14 years (90·0 [70·0–100·0] vs (85·0 [65·0–95·0], p<0·0001). PedsQL social functioning scores were also higher in cases (100·0 [90·0–100·0] than controls (95·0 [80·0–100·0]) in the 12–14 years age group (p<0·0001; Hedges g>0·2).

Interpretation: Compared with controls, children aged 0–14 years who had a SARS-CoV-2 infection had more prevalent long-lasting symptoms. There was a tendency towards better quality-of-life scores related to emotional and social functioning in cases than in controls in older children. The burden of symptoms among children in the control group requires attention. Long COVID must be recognised and multi-disciplinary long COVID clinics for children might be beneficial."

NEJM: Maternal Vaccination and Risk of Hospitalization for Covid-19 among Infants (22 June 2022)

"Background: Infants younger than 6 months of age are at high risk for complications of coronavirus disease 2019 (Covid-19) and are not eligible for vaccination. Transplacental transfer of antibodies against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) after maternal Covid-19 vaccination may confer protection against Covid-19 in infants.

Methods: We used a case-control test-negative design to assess the effectiveness of maternal vaccination during pregnancy against hospitalization for Covid-19 among infants younger than 6 months of age. Between July 1, 2021, and March 8, 2022, we enrolled infants hospitalized for Covid-19 (case infants) and infants hospitalized without Covid-19 (control infants) at 30 hospitals in 22 states. We estimated vaccine effectiveness by comparing the odds of full maternal vaccination (two doses of mRNA vaccine) among case infants and control infants during circulation of the B.1.617.2 (delta) variant (July 1, 2021, to December 18, 2021) and the B.1.1.259 (omicron) variant (December 19, 2021, to March 8, 2022).

Results: A total of 537 case infants (181 of whom had been admitted to a hospital during the delta period and 356 during the omicron period; median age, 2 months) and 512 control infants were enrolled and included in the analyses; 16% of the case infants and 29% of the control infants had been born to mothers who had been fully vaccinated against Covid-19 during pregnancy. Among the case infants, 113 (21%) received intensive care (64 [12%] received mechanical ventilation or vasoactive infusions). Two case infants died from Covid-19; neither infant's mother had been vaccinated during pregnancy. The effectiveness of maternal vaccination against hospitalization for Covid-19 among infants was 52% (95% confidence interval [CI], 33 to 65) overall, 80% (95% CI, 60 to 90) during the delta period, and 38% (95% CI, 8 to 58) during the omicron period. Effectiveness was 69% (95% CI, 50 to

80) when maternal vaccination occurred after 20 weeks of pregnancy and 38% (95% CI, 3 to 60) during the first 20 weeks of pregnancy.

Conclusions: Maternal vaccination with two doses of mRNA vaccine was associated with a reduced risk of hospitalization for Covid-19, including for critical illness, among infants younger than 6 months of age."

Clin Infect Dis: A Retrospective Database Analysis of Before and After Social Distancing in Relation to Pediatric Infection Rate and Healthcare Services Usage During the COVID-19 Pandemic (20 June 2022)

"Background: Social distancing policy was introduced in Israel in 2020 to reduce the spread of COVID-19. The aim of this study was to analyze the effect of social distancing on other infections in children, by comparing disease rate and healthcare utilization before and after social distancing.

Methods: This was a before-and-after study. Within this retrospective database analysis of parallel periods in 2019 (Period 1 and 2) and 2020 (period 3 - pre-lockdown period, and Period 4 - lockdown period) we included all pediatric population registered in the electronic medical records of the Maccabi Healthcare Services, Israel, looking at the occurrence of non-COVID infections, antibiotic purchasing, doctor visits, Ambulatory Emergency Care Centers visits, Emergency Departments' visits, and hospitalizations.

Results: 776,828 and 777,729 children from 2019 and 2020, respectively, were included. We found a lower infection rate in 2020 vs 2019. We did not find a difference in infection rate between Periods 1-2, while a significant difference was found between Periods 3- 4. We found a significant difference between Periods 2-4, with a higher RR than in Periods 1-3. A modest decrease in Ambulatory Emergency Care Center visits, and lower increase in emergency department visits and hospital admissions was found in 2020. We found decreases in antibiotic purchasing between Periods 1-3 and Periods 2-4, more pronounced in 2020 than in 2019.

Conclusions and relevance: Analysis of before and after social distancing and masking showed reduced prevalence of non-COVID pediatric infections, consumption of health care services, and antibiotics consumption."

Clin Infect Dis: Life-Threatening Complications of Influenza versus COVID-19 in U.S. Children (19 June 2022)

"Background: Clinical differences between critical illness from influenza infection versus coronavirus disease 2019 (COVID-19) have not been well characterized in pediatric patients.

Methods: We compared U.S. children (8 months to 17 years) admitted to the intensive care or high acuity unit with influenza (17 hospitals, 12/19/2019-3/9/2020) or COVID-19 (52

hospitals, 3/15/2020-12/31/2020). We compared demographics, underlying conditions, clinical presentation, severity, and outcomes. Using mixed-effects models, we assessed the odds of death or requiring life-support for influenza versus COVID-19 after adjustment for age, sex, race and Hispanic origin, and underlying conditions including obesity.

Results: Children with influenza (n = 179) were younger than those with COVID-19 (n = 381; median 5.2 vs. 13.8 years), less likely to be non-Hispanic black (14.5% vs. 27.6%) or Hispanic (24.0% vs. 36.2%), and less likely to have ≥1 underlying condition (66.4% vs. 78.5%) or be obese (21.4% vs. 42.2%). They were similarly likely to require invasive mechanical ventilation (both 30.2%), vasopressor support (19.6% and 19.9%), or extracorporeal membrane oxygenation (2.2% and 2.9%). Four children with influenza (2.2%) and 11 children with COVID-19 (2.9%) died. The odds of death or requiring life-support in children with influenza vs. COVID-19 were similar (adjusted odds ratio, 1.30 [95% CI: 0.78-2.15; P = 0.32]). Median duration of hospital stay was shorter for influenza than COVID-19 (5 versus 7 days).

Conclusions: Despite differences in demographics and clinical characteristics of children with influenza or COVID-19, the frequency of life-threatening complications was similar. Our findings highlight the importance of implementing prevention measures to reduce transmission and disease severity of influenza and COVID-19."

J Adolesc Health: Changes in Adolescent Mental and Somatic Health Complaints Throughout the COVID-19 Pandemic: A Three-Wave Prospective Longitudinal Study (17 June 2022)

"Purpose: Measures taken to limit the spread of the COVID-19 may have had unintended consequences for the mental and somatic health of children and adolescents.

Methods: A nationwide three-wave survey in a representative sample of 12-16 year olds in Norway, with baseline data collected in January 2019 (n = 9,240; 49% girls) and follow-ups in June 2020 (n = 3,564; 49% girls) and June 2021 (n = 3,540; 47% girls). Linear mixed-effects models were used to estimate change and identify predictors thereof in mental and somatic health complaints.

Results: Following an initial stable trend from before the pandemic to the early phase, both mental health problems (predicted value at T1 .56 [CI .55, .58], T1-T2 change -.04 [CI -.07, -.02], T2-T3 change .12 [CI .09, .14]) and somatic health complaints (predicted value at T1 .59 [95% CI .58, .61], T1-T2 difference -.09 [95% CI -.11, -.65], T2-T3 difference .18 [95% CI .15, .21]) increased significantly 15 months into the pandemic, when controlling for age in the models. When compared to boys, girls had a significantly more pronounced increase in mental health problems and somatic health; loneliness in the early stages of the pandemic significantly predicted health complaints one year later, both mental and somatic complaints.

> Discussion: Our findings suggest that the prolonged pandemic situation and the related societal restrictions have had an impact on adolescent health in general and on the health of girls in particular. The rise in mental and somatic health complaints can in part be attributed to an increase in loneliness."

JAMA Netw Open: Epidemiological and Clinical Features of Kawasaki Disease During the COVID-19 Pandemic in the United States (17 June 2022)

> "Question: How did the incidence and nature of Kawasaki disease (KD) in the United States change during the COVID-19 pandemic?
>
> Findings: In this cohort study of 3922 children with KD, cases of KD across the United States fell by 28% and remained low during periods of COVID-19–related masking and school closure. In the San Diego region, there was a disproportionate decline in KD cases in children aged 1 to 5 years, male children, and Asian children, and clinical features including strawberry tongue, enlarged cervical lymph node, and subacute periungual desquamation were rare.
>
> Meaning: These findings suggest that social behavior is associated with exposure to the agent(s) that trigger KD and are consistent with a respiratory portal of entry for the agent(s)."

Pediatrics: Vaccine Effectiveness of BNT162b2 Against Delta and Omicron Variants in Adolescents (16 June 2022)

> "There are limited data on vaccine effectiveness (VE) against the Omicron variant in adolescents. In Ontario, Canada, most vaccinated adolescents completed their primary series of BNT162b2 during summer 2021; third dose eligibility (6 months following a second dose) expanded to those aged 12-17 years in February 2022. We estimated 2-dose and 3-dose VE against Omicron (BA.1/BA.1.1) and Delta for this age group."

JAMA Netw Open: Epidemiology and Outcomes of SARS-CoV-2 Infection or Multisystem Inflammatory Syndrome in Children vs Influenza Among Critically Ill Children (15 June 2022)

> "This cohort study compares the epidemiology and outcomes of patients in the pediatric intensive care unit with SARS-CoV-2–related disease during the first 15 months of the COVID-19 pandemic vs children with critical influenza prior to the pandemic.…
>
> Among 66 PICUs in the United States, the number of children admitted each quarter with a primary diagnosis of COVID-19 or MISC during the first 15 months of the pandemic was twice as high as that for influenza during the 2 years before the pandemic. Influenza outcomes were observed during a time with no unusual public health measures in place (2018 to early 2020), while those of SARS-CoV-2 occurred while masking, social distancing, and remote schooling occurred. Those measures were sufficient to markedly decrease

> critical illness from many respiratory viruses, including nearly eliminating influenza admissions to these PICUs. Without these measures in place for this largely unvaccinated population, SARS-CoV-2 would likely have led to a number of critically ill children several-fold higher than seen with prepandemic influenza as well as more deaths."

JAMA Pediatr: Childcare and Employment Disruptions in 2020 Among Caregivers of Children With and Without Special Health Care Needs (13 June 2022)

> "This survey study evaluates childcare-related employment disruptions before and after COVID-19, accounting for child special health care needs status and sociodemographic factors….
>
> Childcare-related employment disruption increased by approximately one-third in 2020 and was higher among caregivers for CSHCN, low-income families, and children from racial and ethnic minority groups. Parents' job loss can lead to loss of insurance coverage for their children5 and may be directly detrimental to children's health. Without increased access to childcare, caregivers may struggle to meet the basic human and health care needs of their children."

Clin Infect Dis: Multisystem Inflammatory Syndrome in Children (MIS-C) During SARS-CoV-2 Delta and Omicron Variant Circulation- United States, July 2021 - January 2022 (10 June 2022)

> "We describe 2,116 multisystem inflammatory syndrome in children (MIS-C) cases reported to CDC during Delta and Omicron circulation from July 2021-January 2022. Half of MIS-C patients were aged 5-11 years, 52% received ICU-level care, and 1.1% died. Only 3.0% of eligible patients were fully vaccinated prior to MIS-C onset."

J Pediatr Gastroenterol Nutr: Long COVID-19 Liver Manifestation in Children (10 June 2022)

> "Objectives: SARS CoV-2, the novel coronavirus responsible for coronavirus disease (COVID-19), has been a major cause of morbidity and mortality worldwide. Gastrointestinal and hepatic manifestations during acute disease have been reported extensively in the literature. Post-COVID-19 cholangiopathy has been increasingly reported in adults. In children, data are sparse. Our aim was to describe pediatric patients who recovered from COVID-19 and later presented with liver injury.
>
> Methods: This is a retrospective case-series study of pediatric patients with post-COVID-19 liver manifestations. We collected data on demographics, medical history, clinical presentation, laboratory results, imaging, histology, treatment, and outcome.
>
> Results: We report five pediatric patients who recovered from COVID-19 and later presented with liver injury. Two types of clinical presentation were distinguishable. Two infants aged 3 and 5 months, previously healthy, presented with acute liver failure that rapidly progressed to liver transplantation. Their liver explant showed massive necrosis with

cholangiolar proliferation and lymphocytic infiltrate. Three children, two aged 8 years and one aged 13 years, presented with hepatitis with cholestasis. Two children had a liver biopsy significant for lymphocytic portal and parenchyma inflammation, along with bile duct proliferations. All three were started on steroid treatment; liver enzymes improved, and they were weaned successfully from treatment. For all five patients, extensive etiology workup for infectious and metabolic etiologies were negative.

Conclusions: We report two distinct patterns of potentially long COVID-19 liver manifestations in children with common clinical, radiological, and histopathological characteristics after a thorough workup excluded other known etiologies."

Beyond COVID

MMWR: Trends in Acute Hepatitis of Unspecified Etiology and Adenovirus Stool Testing Results in Children — United States, 2017–2022 (17 June 2022)

"What is already known about this topic? Following identification of pediatric hepatitis cases of unknown etiology in the United States and the United Kingdom, CDC issued a request in April 2022 for U.S. providers to report additional cases. Many reported cases had test results positive for adenovirus, which is not known to cause hepatitis in immunocompetent children.

What is added by this report? Analyses of four data sources did not indicate recent increases in hepatitis-associated emergency department visits or hospitalizations, liver transplants, or adenovirus types 40/41 percent positivity among U.S. children compared with pre–COVID-19 pandemic levels.

What are the implications for public health practice? Current data do not suggest an increase in pediatric hepatitis or adenovirus types 40/41 above pre–COVID-19 pandemic baseline levels; continued surveillance is important to monitor changes over time."

Healthcare Workers

News in Brief

Long Reads

"'It was stolen from me': Black doctors are forced out of training programs at far higher rates than white residents" (STAT).

"What will it take to level the playing field for Black residents?" (STAT)

Journal Articles

JAMA Otolaryngol Head Neck Surg: Assessment of Sleep Features, Mental Health Outcomes, and Alcohol and Tobacco Consumption in Residents and Fellows in Otolaryngology Before and During the COVID-19 Pandemic (16 June 2022)

> "Question: What were the sleep, mental status, and alcohol and tobacco consumption habits of residents and fellows in otolaryngology before and during the COVID-19 pandemic?
>
> Findings: In this cohort study of 128 residents and fellows in otolaryngology in 6 European hospitals, the COVID-19 pandemic was associated with an increase of workload. The increase of workload was associated with a worsening of mental health and sleep outcomes and an increase of alcohol consumption.
>
> Meaning: The results of this cohort study suggest that the COVID-19 pandemic and related workload increase may have negative outcomes associated with mental health and sleep and with alcohol consumption of residents and fellows in otolaryngology."

J Community Health: COVID-19 Vaccine Hesitancy, Acceptance, and Promotion Among Healthcare Workers: A Mixed-Methods Analysis (08 June 2022)

> "Even with vaccine mandates, COVID-19 vaccine hesitancy remains a concern among healthcare workers, in part due to their role in promoting vaccination among patients and communities. To examine COVID-19 vaccine hesitancy, acceptance, and promotion among healthcare workers, we conducted a mixed-methods analysis of (1) survey responses about COVID-19 vaccination and (2) Twitter messages (i.e., tweets) relevant to COVID-19 vaccination and healthcare. A total of 540 hospital employees completed the survey. Those that completed less than 80% of the survey or did not endorse employment at the hospital were excluded, resulting in a total of 511 valid responses; 93.2% reported receiving at least one dose of a COVID-19 vaccine. Approximately 1/3 of vaccinated individuals indicated they posted about receiving the vaccine on social media. Simultaneously, we analyzed a sample of 3845 tweets; 2299 (60%) were relevant to COVID-19 vaccination and 1863 (81%) were coded as authored by an individual. Of tweets authored by an individual, 6% (n = 106) were authored by a healthcare provider/health sciences student. Among relevant tweets, the most frequent code across all sentiment categories was related to the pharmaceutical industry (n = 529 tweets, 28%; n = 33, 31% of tweets authored by healthcare workers). Triangulation of results found themes including vaccine access, trust, and vaccine safety or negative health impacts. Results suggest that promoting the sharing of COVID-19 vaccine personal narratives on social media, combined with interventions targeting specific reasons for COVID-19 vaccine hesitancy and emphasizing freedom from fear once vaccinated could be effective at reducing COVID-19 vaccine hesitancy among this population."

Mental Health and Wellness

Special Reports and Other Resources

WHO: World mental health report: Transforming mental health for all - executive summary (16 June 2022)

> "Mental health is critically important to everyone, everywhere. All over the world, mental health needs are high but responses are insufficient and inadequate. The *World mental health report: transforming mental health for all* is designed to inspire and inform better mental health for everyone everywhere. Drawing on the latest evidence available, showcasing examples of good practice from around the world, and voicing people's lived experience, it highlights why and where change is most needed and how it can best be achieved. It calls on all stakeholders to work together to deepen the value and commitment given to mental health, reshape the environments that influence mental health, and strengthen the systems that care for mental health."

Journal Articles

CNS Drugs: Post-COVID-19 Depressive Symptoms: Epidemiology, Pathophysiology, and Pharmacological Treatment (21 June 2022)

> "The Coronavirus Disease 2019 (COVID-19) pandemic is still spreading worldwide over 2 years since its outbreak. The psychopathological implications in COVID-19 survivors such as depression, anxiety, and cognitive impairments are now recognized as primary symptoms of the "post-acute COVID-19 syndrome." Depressive psychopathology was reported in around 35% of patients at short, medium, and long-term follow-up after the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) infection. Post-COVID-19 depressive symptoms are known to increase fatigue and affect neurocognitive functioning, sleep, quality of life, and global functioning in COVID-19 survivors. The psychopathological mechanisms underlying post-COVID-19 depressive symptoms are mainly related to the inflammation triggered by the peripheral immune-inflammatory response to the viral infection and to the persistent psychological burden during and after infection. The large number of SARS-CoV-2-infected patients and the high prevalence of post-COVID-19 depressive symptoms may significantly increase the pool of people suffering from depressive disorders. Therefore, it is essential to screen, diagnose, treat, and monitor COVID-19 survivors' psychopathology to counteract the depression disease burden and related years of life lived with disability. This paper reviews the current literature in order to synthesize the available evidence regarding epidemiology, clinical features, neurobiological underpinning, and pharmacological treatment of post-COVID-19 depressive symptoms."

BMJ Mil Health: Addressing moral injury in the military (15 June 2022)

> "Moral injury is a relatively new, but increasingly studied, construct in the field of mental health, particularly in relation to current and ex-serving military personnel. Moral injury refers to the enduring psychosocial, spiritual or ethical harms that can result from exposure to high-stakes events that strongly clash with one's moral beliefs. There is a pressing need for further research to advance understanding of the nature of moral injury; its relationship to mental disorders such as posttraumatic stress disorder and depression; triggering events and underpinning mechanisms; and prevalence, prevention and treatment. In the meantime, military leaders have an immediate need for guidance on how moral injury should be addressed and, where possible, prevented. Such guidance should be theoretically sound, evidence-informed and ethically responsible. Further, the implementation of any practice change based on the guidance should contribute to the advancement of science through robust evaluation. This paper draws together current research on moral injury, best-practice approaches in the adjacent field of psychological resilience, and principles of effective implementation and evaluation. This research is combined with the military and veteran mental health expertise of the authors to provide guidance on the design, implementation and evaluation of moral injury interventions in the military. The paper discusses relevant training in military ethical practice, as well as the key roles leaders have in creating cohesive teams and having frank discussions about the moral and ethical challenges that military personnel face."

JAMA Netw Open: Estimated Prevalence of and Factors Associated With Clinically Significant Anxiety and Depression Among US Adults During the First Year of the COVID-19 Pandemic (15 June 2022)

> "Question: How much did clinically significant anxiety and depression increase among US adults during the first year of the COVID-19 pandemic?
>
> Findings: In this survey study of more than 1.4 million respondents in the US Behavioral Risk Factor Surveillance System survey, responses to a screening question calibrated to a 4-item Patient Health Questionnaire score of 6 or greater suggested that aggregate prevalence of clinically significant anxiety and depression increased only modestly overall among US adults in 2020 compared with 2017 to 2019.
>
> Meaning: This modest estimated aggregate increase could mask more substantial increases in key population segments (eg, first responders) and might have become larger in 2021 and 2022."

Other Infectious Diseases and Public Health Threats

News in Brief

"Covid is making flu and other common viruses act in unfamiliar ways" (WP).

"Study documents rise of antibiotic-resistant typhoid" (CIDRAP; see also: Lancet Microbe paper).

"EPA warns toxic 'forever chemicals' more dangerous than once thought" (WP).

"Ancient DNA traces origin of Black Death — Genomes show that plague-causing bacteria found in Kyrgyzstan graves are direct ancestors of those that triggered the medieval pandemic" (Nature; see also: Nature paper and podcast).

Long Reads

"Africa's outbreak sentinels — How monitoring wildlife can prevent the next pandemic" (Nat Med).

Special Reports and Other Resources

CF: Meeting America's Public Health Challenge — Recommendations for Building a National Public Health System That Addresses Ongoing and Future Health Crises, Advances Equity, and Earns Trust (21 June 2022)

> "More than 1 million Americans have died from COVID-19, a toll that exceeds the total number of U.S. combat deaths from all wars since the nation's founding. The United States is also failing to protect millions of people from growing health challenges, such as overdoses, diabetes, and maternal mortality. The scale of these challenges justifies the development of a national public health system to save lives every day and better prepare for future emergencies. The Commonwealth Fund Commission on a National Public Health System finds that:
>
> - Public health efforts are not organized for success. Despite dozens of federal health agencies and nearly 3,000 state, local, tribal, and territorial health departments, there is no single person or office at the U.S. Department of Health and Human Services to lead and coordinate the nation's public health efforts.
> - Public health funding is not sufficient or reliable. The chronic underfunding of public health has left behind a weak infrastructure, with antiquated data systems, an overworked and stressed workforce, laboratories in disrepair, and other major gaps.
> - Expectations for health agencies are minimal. Funding is not tied to a set of basic standards for the capabilities of state, local, tribal, and territorial health departments.

- The health care system is missing opportunities to support health improvement. It is difficult to convert collaboration with public health agencies during emergencies into sustainable work to address day-today health challenges.
- The public health enterprise is facing a crisis in trust. This crisis relates to experiences with racism and discrimination, ideological opposition, and misinformation.

The United States should build a national public health system to promote and protect the health of every person, regardless of who they are and where they live; implement effective strategies with others in the public and private sectors; respond to both day-to-day health priorities and crises with vigor and competence; and, in the process, earn high levels of trust.…

Modernizing public health in the United States is not a simple task, but it cannot be ignored. The window for change is open, and the moment of opportunity is now."

Journal Articles

MMWR: Notes from the Field: Diagnosis and Investigation of Pneumonic Plague During a Respiratory Disease Pandemic — Wyoming, 2021 (17 June 2022)

"Overlooked diagnoses of rare pathogens can lead to significant consequences. This investigation highlights challenges associated with diagnosis and treatment of an illness from a rare pathogen whose symptoms mimic those of a pandemic illness, in this case, COVID-19. Timelier diagnosis might have resulted in initiation of effective antibiotic treatment closer to disease onset and decreased illness severity and hospitalization. Clinicians should be aware of the possibility of plague in patients with compatible symptoms and exposure history in areas where plague is endemic."

Special Topic: Monkeypox

News in Brief

"U.S. CDC confirms evidence of local monkeypox transmission" (Reuters).

"WHO will rename monkeypox virus to minimize stigma, racism" (Bloomberg; see also: Virological.org paper).

"WHO says it's investigating monkeypox DNA in semen" (CIDRAP).

"Monkeypox outbreak strain has far more mutations than expected" (Medpage; see also: Nat Med paper).

Monkeypox may have been silently circulating in people since 2018 (NYT).

"U.S. monkeypox response mirrors early coronavirus missteps, experts say" (WP).

Special Reports and Other Resources

WHO: Vaccines and immunization for monkeypox: Interim guidance, 14 June 2022 (14 June 2022)

> "The goal of the global outbreak response for monkeypox is to control the outbreak, and to effectively use strong public health measures to prevent onward spread of the disease. Judicious use of vaccines can support this response. This interim guidance, developed with the advice and support of the Strategic Advisory Group of Experts (SAGE) Ad-hoc Working Group on smallpox and monkeypox vaccines, provides the first WHO recommendations on vaccines and immunization for monkeypox. Key points follow.
>
> - Mass vaccination is not required nor recommended for monkeypox at this time.
> - For contacts of cases, post-exposure prophylaxis (PEP) is recommended with an appropriate second- or third-generation vaccine, ideally within four days of first exposure to prevent onset of disease.
> - Pre-exposure prophylaxis (PrEP) is recommended for health workers at risk, laboratory personnel working with orthopoxviruses, clinical laboratory staff performing diagnostic testing for monkeypox, and others who may be at risk as per national policy.
> - Vaccination programmes must be backed by thorough surveillance and contact-tracing, and accompanied by a strong information campaign, robust pharmacovigilance, ideally in the context of collaborative vaccine effectiveness studies with standardized protocols and data collection tools.
> - Decisions on use of smallpox or monkeypox vaccines should be based on a full assessment of risks and benefits on a case-by-case basis.
>
> Most interim recommendations provided here concern off-label use of vaccines. The guidance will be updated as more information becomes available."

WHO: Clinical management and infection prevention and control for monkeypox: Interim rapid response guidance, 10 June 2022 (10 June 2022)

> "In the context of the current multi-country monkeypox outbreak, WHO has developed interim rapid response guidance for the clinical management and infection prevention and control of monkeypox for health care and community settings.
>
> It includes considerations for certain populations such as patients with mild disease with considerations for community care, patients with moderate to severe disease, sexually

active persons, pregnant or breastfeeding women, children and young persons. The guidance also addresses considerations for clinical management such as the use of therapeutics, nutritional support, mental health services, and post-infection follow-up.

The document provides guidance for clinicians, health facility managers, health workers and infection prevention and control practitioners including but not limited to those working in primary care clinics, sexual health clinics, emergency departments, infectious diseases clinics, genitourinary clinics, dermatology clinics, maternity services, paediatrics, obstetrics and gynaecology and acute care facilities that provide care for patients with suspected or confirmed monkeypox."

Journal Articles

JAMA: Monkeypox in 2022—What Clinicians Need to Know (13 June 2022)

This succinct review covers the history, prevention, clinical symptoms, diagnosis, and treatment of monkeypox.

Infect Control Hosp Epidemiol: Monkeypox transmission following exposure in healthcare facilities in nonendemic settings: Low risk but limited literature (09 June 2022)

"Transmission risk of monkeypox in healthcare settings outside endemic regions has not been well defined. A rapid review of the literature, including cases outside monkeypox-endemic regions from 2000 to 2022 identified a single reported case of transmission. Available literature is limited by nonstandardized exposure definitions and limited detail describing exposures."

References

Journal Articles

Ann Clin Transl Neurol: Shanley JE, Valenciano AF, Timmons G, Miner AE, Kakarla V, Rempe T, Yang JH, Gooding A, Norman MA, Banks SJ, Ritter ML, Ellis RJ, Horton L, Graves JS. Longitudinal evaluation of neurologic-post acute sequelae SARS-CoV-2 infection symptoms. Ann Clin Transl Neurol. 2022 Jun 15. doi: 10.1002/acn3.51578. Epub ahead of print. PMID: 35702954. Link: https://onlinelibrary.wiley.com/doi/full/10.1002/acn3.51578

Ann Med Surg: Almas T, Malik J, Alsubai AK, Jawad Zaidi SM, Iqbal R, Khan K, Ali M, Ishaq U, Alsufyani M, Hadeed S, Alsufyani R, Ahmed R, Thakur T, Antony M, Antony I, Bhullar A, Kotait F, Al-Ani L. Post-acute COVID-19 syndrome and its prolonged effects: An updated systematic

review. Ann Med Surg (Lond). 2022 Jun 15:103995. doi: 10.1016/j.amsu.2022.103995. Epub ahead of print. PMID: 35721785; PMCID: PMC9197790. Link: https://www.sciencedirect.com/science/article/pii/S2049080122007555

BMJ Mil Health: Phelps AJ, Adler AB, Belanger SAH, Bennett C, Cramm H, Dell L, Fikretoglu D, Forbes D, Heber A, Hosseiny F, Morganstein JC, Murphy D, Nazarov A, Pedlar D, Richardson JD, Sadler N, Williamson V, Greenberg N, Jetly R; Members of the Five Eyes Mental Health Research and Innovation Collaborative. Addressing moral injury in the military. BMJ Mil Health. 2022 Jun 15:e002128. doi: 10.1136/bmjmilitary-2022-002128. Epub ahead of print. PMID: 35705259. Link: https://militaryhealth.bmj.com/content/early/2022/06/14/bmjmilitary-2022-002128

BMJ Open: Risch M, Grossmann K, Aeschbacher S, Weideli OC, Kovac M, Pereira F, Wohlwend N, Risch C, Hillmann D, Lung T, Renz H, Twerenbold R, Rothenbühler M, Leibovitz D, Kovacevic V, Markovic A, Klaver P, Brakenhoff TB, Franks B, Mitratza M, Downward GS, Dowling A, Montes S, Grobbee DE, Cronin M, Conen D, Goodale BM, Risch L; COVID-19 remote early detection (COVID-RED) consortium. Investigation of the use of a sensor bracelet for the presymptomatic detection of changes in physiological parameters related to COVID-19: an interim analysis of a prospective cohort study (COVI-GAPP). BMJ Open. 2022 Jun 21;12(6):e058274. doi: 10.1136/bmjopen-2021-058274. PMID: 35728900. Link: https://bmjopen.bmj.com/content/12/6/e058274

Clin Infect Dis: Bouton TC, Atarere J, Turcinovic J, Seitz S, Sher-Jan C, Gilbert M, White L, Zhou Z, Hossain MM, Overbeck V, Doucette-Stamm L, Platt J, Landsberg HE, Hamer DH, Klapperich C, Jacobson KR, Connor JH. Viral dynamics of Omicron and Delta SARS-CoV-2 variants with implications for timing of release from isolation: a longitudinal cohort study. Clin Infect Dis. 2022 Jun 23:ciac510. doi: 10.1093/cid/ciac510. Epub ahead of print. PMID: 35737948. Link: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac510/6614634

Clin Infect Dis: Carlin AF, Clark AE, Chaillon A, Garretson AF, Bray W, Porrachia M, Santos AT, Rana TM, Smith DM. Virologic and Immunologic Characterization of COVID-19 Recrudescence after Nirmatrelvir/Ritonavir Treatment. Clin Infect Dis. 2022 Jun 20:ciac496. doi: 10.1093/cid/ciac496. Epub ahead of print. PMID: 35723411. Link: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac496/6611663

Clin Infect Dis: Gold JAW, Ahmad FB, Cisewski JA, Rossen LM, Montero AJ, Benedict K, Jackson BR, Toda M. Increased deaths from fungal infections during the COVID-19 pandemic-National Vital Statistics System, United States, January 2020-December 2021. Clin Infect Dis. 2022 Jun 19:ciac489. doi: 10.1093/cid/ciac489. Epub ahead of print. PMID: 35717660. Link: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac489/6611491

Clin Infect Dis: Halasa NB, Spieker AJ, Young CC, et al; Pediatric Intensive Care Influenza; Overcoming COVID-19 Investigators. Life-Threatening Complications of Influenza versus COVID-19 in U.S. Children. Clin Infect Dis. 2022 Jun 19:ciac477. doi: 10.1093/cid/ciac477. Epub ahead

of print. PMID: 35717646. Link: https://academic.oup.com/cid/advance-article-abstract/doi/10.1093/cid/ciac477/6611483

Clin Infect Dis: Keating P, Sell J, Chen J, Ackelsberg J, Wu W, Tsoi B, Weiss D. Delayed Recognition of COVID-19 in New York City: A descriptive analysis of COVID-19 illness prior to February 29, 2020. Clin Infect Dis. 2022 Jun 20:ciac490. doi: 10.1093/cid/ciac490. Epub ahead of print. PMID: 35723267. Link: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac490/6611571

Clin Infect Dis: Levy R, Cohen R, Lev-Shalem L, Eisenkraft A, Fisher Yosef T. A Retrospective Database Analysis of Before and After Social Distancing in Relation to Pediatric Infection Rate and Healthcare Services Usage During the COVID-19 Pandemic. Clin Infect Dis. 2022 Jun 20:ciac502. doi: 10.1093/cid/ciac502. Epub ahead of print. PMID: 35724239. Link: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac502/6611849

Clin Infect Dis: Miller AD, Yousaf AR, Bornstein E, Wu MJ, Lindsey K, Melgar M, Oster ME, Zambrano LD, Campbell AP. Multisystem Inflammatory Syndrome in Children (MIS-C) During SARS-CoV-2 Delta and Omicron Variant Circulation- United States, July 2021 - January 2022. Clin Infect Dis. 2022 Jun 10:ciac471. doi: 10.1093/cid/ciac471. Epub ahead of print. PMID: 35684958. Link: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac471/6605071

Clin Infect Dis: Roskosky M, Moni G, Kawakami V, Lambert J, Brostrom-Smith C, Whitney H, Phu A, Look J, Pallickaparambil A, Kay M, Duchin J. SARS-CoV-2 Transmission Associated with an Indoor Music Event That Required Proof of Full Vaccination Against COVID-19 Prior to Entry-Seattle, July 2021. Clin Infect Dis. 2022 Jun 20:ciac494. doi: 10.1093/cid/ciac494. Epub ahead of print. PMID: 35723277. Link: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac494/6611550

Clin Infect Dis: Rottenstreich A, Zarbiv G, Oiknine-Djian E, Vorontsov O, Zigron R, Kleinstern G, Porat S, Wolf DG. Kinetics of maternally-derived anti- SARS-CoV-2 antibodies in infants in relation to the timing of antenatal vaccination. Clin Infect Dis. 2022 Jun 19:ciac480. doi: 10.1093/cid/ciac480. Epub ahead of print. PMID: 35717644. Link: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac480/6611486

Clin Infect Dis: Strid P, Zapata LB, Tong VT, Zambrano LD, Woodworth KR, Riser AP, Galang RR, Gilboa SM, Ellington SR. COVID-19 Severity among Women of Reproductive Age with Symptomatic Laboratory-Confirmed SARS-CoV-2 by Pregnancy Status - United States, Jan 1, 2020 - Dec 25, 2021. Clin Infect Dis. 2022 Jun 19:ciac479. doi: 10.1093/cid/ciac479. Epub ahead of print. PMID: 35717652. Link: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac479/6611488

Clin Infect Dis: Temte JL, Barlow S, Temte E, Goss M, Bateman A, Florek K, Uzicanin A. SARS-CoV-2 co-detection with influenza A and other respiratory viruses among school-aged children and their household members- March 12, 2020, to February 22, 2022, Dane County, Wisconsin. Clin Infect Dis. 2022 Jun 23:ciac487. doi: 10.1093/cid/ciac487. Epub ahead of print. PMID: 35737942. Link: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac487/6614626

Clin Microbiol Infect: Millet C, Narvaneni S, Roman S, Horani G, Chaudhry S, Michael P, Suh J, Jimenez HR. Symptoms Persist in Patients Two Years after COVID-19 infection: A Prospective Follow Up Study. Clin Microbiol Infect. 2022 Jun 17:S1198-743X(22)00321-4. doi: 10.1016/j.cmi.2022.06.008. Epub ahead of print. PMID: 35724867. Link: https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X(22)00321-4/fulltext

CNS Drugs: Mazza MG, Palladini M, Poletti S, Benedetti F. Post-COVID-19 Depressive Symptoms: Epidemiology, Pathophysiology, and Pharmacological Treatment. CNS Drugs. 2022 Jun 21:1–22. doi: 10.1007/s40263-022-00931-3. Epub ahead of print. PMID: 35727534; PMCID: PMC9210800. Link: https://link.springer.com/article/10.1007/s40263-022-00931-3

Curr Med Res Opin: Sylvester SV, Rusu R, Chan B, Bellows M, O'Keefe C, Nicholson S. Sex differences in sequelae from COVID-19 infection and in long COVID syndrome: a review. Curr Med Res Opin. 2022 Jun 20:1-9. doi: 10.1080/03007995.2022.2081454. Epub ahead of print. PMID: 35726132. Link: https://www.tandfonline.com/doi/full/10.1080/03007995.2022.2081454

Emerg Infect Dis: Nevejan L, Cuypers L, Laenen L, Van Loo L, Vermeulen F, Wollants E, et al. Early SARS-CoV-2 reinfections within 60 days and implications for retesting policies. Emerg Infect Dis. 2022 Aug [Original Publication Date: June 23, 2022]. https://doi.org/10.3201/eid2808.220617 Link: https://wwwnc.cdc.gov/eid/article/28/8/22-0617_article

Infect Control Hosp Epidemiol: Zachary KC, Shenoy ES. Monkeypox transmission following exposure in healthcare facilities in nonendemic settings: Low risk but limited literature. Infect Control Hosp Epidemiol. 2022 Jun 9:1-5. doi: 10.1017/ice.2022.152. Epub ahead of print. PMID: 35676244. Link: https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/monkeypox-transmission-following-exposure-in-healthcare-facilities-in-nonendemic-settings-low-risk-but-limited-literature/98E48E5050C7D97CB2C37CD114F49515

Infect Disord Drug Targets: Eslami M, Mollazadeh R, Mirshafiee S, Sehat P, Alizadeh F, Emkanjoo Z, Far VL, Shahmohamadi E. Postural orthostatic tachycardia syndrome and orthostatic hypotension post COVID-19. Infect Disord Drug Targets. 2022 Jun 10. doi: 10.2174/1871526522666220610143504. Epub ahead of print. PMID: 35692134. Link: https://www.eurekaselect.com/article/124356

J Adolesc Health: Hafstad GS, Sætren SS, Wentzel-Larsen T, Augusti EM. Changes in Adolescent Mental and Somatic Health Complaints Throughout the COVID-19 Pandemic: A Three-Wave Prospective Longitudinal Study. J Adolesc Health. 2022 Jun 17:S1054-139X(22)00457-8. doi: 10.1016/j.jadohealth.2022.05.009. Epub ahead of print. PMID: 35725540. Link: https://www.sciencedirect.com/science/article/pii/S1054139X22004578

J Card Fail: Johnson KW, Patel S, Thapi S, Jaladanki SK, Rao A, Nirenberg S, Lala A. Association of Reduced Hospitalizations and Mortality Among COVID-19 Vaccinated Patients with Heart Failure. J Card Fail. 2022 Jun 6:S1071-9164(22)00536-X. doi: 10.1016/j.cardfail.2022.05.008. Epub ahead of print. PMID: 35691478; PMCID: PMC9178679. Link: https://www.onlinejcf.com/article/S1071-9164(22)00536-X/fulltext

J Community Health: Hoffman BL, Boness CL, Chu KH, Wolynn R, Sallowicz L, Mintas D, Douaihy AB, Felter EM, Sidani JE. COVID-19 Vaccine Hesitancy, Acceptance, and Promotion Among Healthcare Workers: A Mixed-Methods Analysis. J Community Health. 2022 Jun 8. doi: 10.1007/s10900-022-01095-3. Epub ahead of print. PMID: 35676390. Link: https://link.springer.com/article/10.1007/s10900-022-01095-3

J Neuropsychiatry Clin Neurosci: Gutierrez-Martinez L, Karten J, Kritzer MD, Josephy-Hernandez S, Kim D, Newhouse A, Pasinski M, Praschan N, Razafsha M, Rubin DB, Sonni A, Fricchione G, Rosand MPHJ, Chemali Z. Post-Acute Sequelae of SARS-CoV-2 Infection: A Descriptive Clinical Study. J Neuropsychiatry Clin Neurosci. 2022 Jun 10:appineuropsych21070193. doi: 10.1176/appi.neuropsych.21070193. Epub ahead of print. PMID: 35686346. Link: https://neuro.psychiatryonline.org/doi/10.1176/appi.neuropsych.21070193

J Pediatr Gastroenterol Nutr: Cooper S, Tobar A, Konen O, Orenshtein N, Kropach N, Landau Y, Mozer-Glassberg Y, Bar-Lev MR, Shaoul R, Shamir R, Waisbourd-Zinman O. Long COVID-19 Liver Manifestation in Children. J Pediatr Gastroenterol Nutr. 2022 Jun 10. doi: 10.1097/MPG.0000000000003521. Epub ahead of print. PMID: 35687535. Link: https://journals.lww.com/jpgn/Abstract/9900/Long_COVID_19_Liver_Manifestation_in_Children.84.aspx

JAMA: Guarner J, Del Rio C, Malani PN. Monkeypox in 2022-What Clinicians Need to Know. JAMA. 2022 Jun 13. doi: 10.1001/jama.2022.10802. Epub ahead of print. PMID: 35696257. Link: https://jamanetwork.com/journals/jama/fullarticle/2793516

JAMA Intern Med: Dickerman BA, Madenci AL, Gerlovin H, Kurgansky KE, Wise JK, Figueroa Muñiz MJ, Ferolito BR, Gagnon DR, Gaziano JM, Cho K, Casas JP, Hernán MA. Comparative Safety of BNT162b2 and mRNA-1273 Vaccines in a Nationwide Cohort of US Veterans. JAMA Intern Med. 2022 Jun 13. doi: 10.1001/jamainternmed.2022.2109. Epub ahead of print. PMID: 35696161. Link: https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2793236

JAMA Netw Open: Burney JA, Roberts SC, DeHaan LL, Shimizu C, Bainto EV, Newburger JW, Dominguez S, Jone PN, Jaggi P, Szmuszkovicz JR, Rowley AH, Samuy N, Scalici P, Tremoulet AH, Cayan DR, Burns JC; KIDCARE Study Investigators. Epidemiological and Clinical Features of Kawasaki Disease During the COVID-19 Pandemic in the United States. JAMA Netw Open. 2022 Jun 1;5(6):e2217436. doi: 10.1001/jamanetworkopen.2022.17436. PMID: 35713905. Link: https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2793496

JAMA Netw Open: Kessler RC, Ruhm CJ, Puac-Polanco V, Hwang IH, Lee S, Petukhova MV, Sampson NA, Ziobrowski HN, Zaslavsky AM, Zubizarreta JR. Estimated Prevalence of and Factors Associated With Clinically Significant Anxiety and Depression Among US Adults During the First Year of the COVID-19 Pandemic. JAMA Netw Open. 2022 Jun 1;5(6):e2217223. doi: 10.1001/jamanetworkopen.2022.17223. PMID: 35704316. Link: https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2793361

JAMA Netw Open: Mi T, Hung P, Li X, McGregor A, He J, Zhou J. Racial and Ethnic Disparities in Postpartum Care in the Greater Boston Area During the COVID-19 Pandemic. JAMA Netw Open. 2022 Jun 1;5(6):e2216355. doi: 10.1001/jamanetworkopen.2022.16355. PMID: 35737390. Link: https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2793512

JAMA Netw Open: Shein SL, Carroll CL, Remy KE, Rogerson CM, McCluskey CK, Lin A, Rotta AT. Epidemiology and Outcomes of SARS-CoV-2 Infection or Multisystem Inflammatory Syndrome in Children vs Influenza Among Critically Ill Children. JAMA Netw Open. 2022 Jun 1;5(6):e2217217. doi: 10.1001/jamanetworkopen.2022.17217. PMID: 35704321. Link: https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2793366

JAMA Otolaryngol Head Neck Surg: Chebib E, Chiesa-Estomba CM, Radulesco T, Barillari MR, Mayo-Yáñez M, Hans S, Lechien JR. Assessment of Sleep Features, Mental Health Outcomes, and Alcohol and Tobacco Consumption in Residents and Fellows in Otolaryngology Before and During the COVID-19 Pandemic. JAMA Otolaryngol Head Neck Surg. 2022 Jun 16. doi: 10.1001/jamaoto.2022.1210. Epub ahead of print. PMID: 35708711. Link: https://jamanetwork.com/journals/jamaotolaryngology/fullarticle/2793113

JAMA Pediatr: Easterly C, Kim D, Steiner MJ, deJong NA. Childcare and Employment Disruptions in 2020 Among Caregivers of Children With and Without Special Health Care Needs. JAMA Pediatr. 2022 Jun 13. doi: 10.1001/jamapediatrics.2022.1766. Epub ahead of print. PMID: 35696193. Link: https://jamanetwork.com/journals/jamapediatrics/fullarticle/2792832

Lancet: Antonelli M, Pujol JC, Spector TD, Ourselin S, Steves CJ. Risk of long COVID associated with delta versus omicron variants of SARS-CoV-2. Lancet. 2022 Jun 18;399(10343):2263-2264. doi: 10.1016/S0140-6736(22)00941-2. PMID: 35717982. Link: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(22)00941-2/fulltext

Lancet: Wong HL, Hu M, Zhou CK, Lloyd PC, Amend KL, Beachler DC, Secora A, McMahill-Walraven CN, Lu Y, Wu Y, Ogilvie RP, Reich C, Djibo DA, Wan Z, Seeger JD, Akhtar S, Jiao Y, Chillarige Y, Do R, Hornberger J, Obidi J, Forshee R, Shoaibi A, Anderson SA. Risk of myocarditis and pericarditis after the COVID-19 mRNA vaccination in the USA: a cohort study in claims databases. Lancet. 2022 Jun 11;399(10342):2191-2199. doi: 10.1016/S0140-6736(22)00791-7. PMID: 35691322; PMCID: PMC9183215. Link: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(22)00791-7/fulltext

Lancet Child Adolesc Health: Berg SK, Palm P, Nygaard U, et al. Long COVID symptoms in SARS-CoV-2-positive children aged 0–14 years and matched controls in Denmark (LongCOVIDKidsDK): a national, cross-sectional study. Lancet Child Adolesc Health. Published: June 22, 2022 DOI: https://doi.org/10.1016/S2352-4642(22)00154-7 Link: https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(22)00154-7/fulltext

Mil Med: Krahl PL, Mallon TM, Gaydos JC. Hazardous Non-Combat Exposures in the U.S. Department of Defense. Mil Med. 2021 Jun 21:usac166. doi: 10.1093/milmed/usac166. Epub ahead of print. PMID: 35727733. Link: https://academic.oup.com/milmed/advance-article/doi/10.1093/milmed/usac166/6612491

MMWR: Gold JA, Kelleher J, Magid J, et al. Dispensing of Oral Antiviral Drugs for Treatment of COVID-19 by Zip Code–Level Social Vulnerability — United States, December 23, 2021–May 21, 2022. MMWR Morb Mortal Wkly Rep. ePub: 21 June 2022. DOI: http://dx.doi.org/10.15585/mmwr.mm7125e1 Link: https://www.cdc.gov/mmwr/volumes/71/wr/mm7125e1.htm

MMWR: Kambhampati AK, Burke RM, Dietz S, et al. Trends in Acute Hepatitis of Unspecified Etiology and Adenovirus Stool Testing Results in Children — United States, 2017–2022. MMWR Morb Mortal Wkly Rep. ePub: 14 June 2022. DOI: http://dx.doi.org/10.15585/mmwr.mm7124e1 Link: https://www.cdc.gov/mmwr/volumes/71/wr/mm7124e1.htm

MMWR: Malden DE, Hong V, Lewin BJ, et al. Hospitalization and Emergency Department Encounters for COVID-19 After Paxlovid Treatment — California, December 2021–May 2022. MMWR Morb Mortal Wkly Rep. ePub: 21 June 2022. DOI: http://dx.doi.org/10.15585/mmwr.mm7125e2 Link: https://www.cdc.gov/mmwr/volumes/71/wr/mm7125e2.htm

MMWR: Siu AW, Tillman C, Van Houten C, Busacker A, Harrist A. Notes from the Field: Diagnosis and Investigation of Pneumonic Plague During a Respiratory Disease Pandemic — Wyoming, 2021. MMWR Morb Mortal Wkly Rep 2022;71:806–807. DOI: http://dx.doi.org/10.15585/mmwr.mm7124a5 Link: https://www.cdc.gov/mmwr/volumes/71/wr/mm7124a5.htm

MMWR: Yuan Y, Thierry JM, Bull-Otterson L, et al. COVID-19 Cases and Hospitalizations Among Medicare Beneficiaries With and Without Disabilities — United States, January 1, 2020–November 20, 2021. MMWR Morb Mortal Wkly Rep 2022;71:791–796. DOI: http://dx.doi.org/10.15585/mmwr.mm7124a3 Link: https://www.cdc.gov/mmwr/volumes/71/wr/mm7124a3.htm

Nature: Cao Y, Yisimayi A, Jian F, et al. BA.2.12.1, BA.4 and BA.5 escape antibodies elicited by Omicron infection. Nature. 2022 Jun 17. doi: 10.1038/s41586-022-04980-y. Epub ahead of print. PMID: 35714668. Link: https://www.nature.com/articles/s41586-022-04980-y

NEJM: Altarawneh HN, Chemaitelly H, Ayoub HH, et al. Effects of Previous Infection and Vaccination on Symptomatic Omicron Infections. N Engl J Med. 2022 Jun 15. doi: 10.1056/NEJMoa2203965. Epub ahead of print. PMID: 35704396. Link: https://www.nejm.org/doi/full/10.1056/NEJMoa2203965

NEJM: DeSilva M, Haapala J, Vazquez-Benitez G, Vesco KK, Daley MF, Getahun D, Zerbo O, Naleway A, Nelson JC, Williams JTB, Hambidge SJ, Boyce TG, Fuller CC, Lipkind HS, Weintraub E, McNeil MM, Kharbanda EO. Evaluation of Acute Adverse Events after Covid-19 Vaccination during Pregnancy. N Engl J Med. 2022 Jun 22. doi: 10.1056/NEJMc2205276. Epub ahead of print. PMID: 35731916. Link: https://www.nejm.org/doi/full/10.1056/NEJMc2205276

NEJM: Halasa NB, Olson SM, Staat MA, et al; Overcoming Covid-19 Investigators. Maternal Vaccination and Risk of Hospitalization for Covid-19 among Infants. N Engl J Med. 2022 Jun 22. doi: 10.1056/NEJMoa2204399. Epub ahead of print. PMID: 35731908. Link: https://www.nejm.org/doi/full/10.1056/NEJMoa2204399

NEJM: Hachmann NP, Miller J, Collier AY, Ventura JD, Yu J, Rowe M, Bondzie EA, Powers O, Surve N, Hall K, Barouch DH. Neutralization Escape by SARS-CoV-2 Omicron Subvariants BA.2.12.1, BA.4, and BA.5. N Engl J Med. 2022 Jun 22. doi: 10.1056/NEJMc2206576. Epub ahead of print. PMID: 35731894. Link: https://www.nejm.org/doi/full/10.1056/NEJMc2206576

Pediatrics: Buchan SA, Nguyen L, Wilson SE, Kitchen SA, Kwong JC. Vaccine Effectiveness of BNT162b2 Against Delta and Omicron Variants in Adolescents. Pediatrics. 2022 Jun 16. doi: 10.1542/peds.2022-057634. Epub ahead of print. PMID: 35706105. Link: https://publications.aap.org/pediatrics/article/doi/10.1542/peds.2022-057634/188277/Vaccine-Effectiveness-of-BNT162b2-Against-Delta

PLoS One: Holdsworth DA, Chamley R, Barker-Davies R, O'Sullivan O, Ladlow P, Mitchell JL, Dewson D, Mills D, May SLJ, Cranley M, Xie C, Sellon E, Mulae J, Naylor J, Raman B, Talbot NP, Rider OJ, Bennett AN, Nicol ED. Comprehensive clinical assessment identifies specific neurocognitive deficits in working-age patients with long-COVID. PLoS One. 2022 Jun 10;17(6):e0267392. doi: 10.1371/journal.pone.0267392. PMID: 35687603; PMCID: PMC9187094. Link: https://dx.plos.org/10.1371/journal.pone.0267392

PNAS: Galvani AP, Parpia AS, Pandey A, Sah P, Colón K, Friedman G, Campbell T, Kahn JG, Singer BH, Fitzpatrick MC. Universal healthcare as pandemic preparedness: The lives and costs that could have been saved during the COVID-19 pandemic. Proc Natl Acad Sci U S A. 2022 Jun 21;119(25):e2200536119. doi: 10.1073/pnas.2200536119. Epub 2022 Jun 13. PMID: 35696578. Link: https://www.pnas.org/doi/full/10.1073/pnas.2200536119

Sci Rep: Rigoni M, Torri E, Nollo G, Donne LD, Rizzardo S, Lenzi L, Falzone A, Cozzio S. "Long COVID" results after hospitalization for SARS-CoV-2 infection. Sci Rep. 2022 Jun 10;12(1):9581. doi: 10.1038/s41598-022-13077-5. PMID: 35688830; PMCID: PMC9185134. Link: https://www.nature.com/articles/s41598-022-13077-5

Vaccine: Wynberg E, Han AX, Boyd A, van Willigen HDG, Verveen A, Lebbink R, van der Straten K, Kootstra N, van Gils MJ, Russell C, Leenstra T, de Jong MD, de Bree GJ, Prins M; RECoVERED Study Group. The effect of SARS-CoV-2 vaccination on post-acute sequelae of COVID-19 (PASC): A prospective cohort study. Vaccine. 2022 Jun 7:S0264-410X(22)00748-4. doi: 10.1016/j.vaccine.2022.05.090. Epub ahead of print. PMID: 35725782; PMCID: PMC9170535. Link: https://www.sciencedirect.com/science/article/pii/S0264410X22007484

Special Reports and Other Resources

CF: Commonwealth Fund. Meeting America's Public Health Challenge — Recommendations for Building a National Public Health System That Addresses Ongoing and Future Health Crises, Advances Equity, and Earns Trust (21 June 2022). Link: https://www.commonwealthfund.org/publications/fund-reports/2022/jun/meeting-americas-public-health-challenge

GAO: US Government Accountability Office. Public Health Preparedness: Medical Countermeasure Development for Certain Serious or Life-Threatening Conditions (16 June 2022). Link: https://www.gao.gov/products/gao-22-105248

JHCHS: The Johns Hopkins Center for Health Security. Walsh M, Warmbrod L, Cicero A, Gronvall K. Summary of Expert Insights for the US Department of Defense Biodefense Posture Review Meeting (09 June 2022). Link: https://www.centerforhealthsecurity.org/our-work/publications/summary-of-expert-insights-for-the-us-department-of-defense-biodefense-posture-review-meeting

WHO: World Health Organization. Clinical management and infection prevention and control for monkeypox: Interim rapid response guidance, 10 June 2022 (10 June 2022). Link: https://www.who.int/publications/i/item/WHO-MPX-Clinical-and-IPC-2022.1

WHO: World Health Organization. Vaccines and immunization for monkeypox: Interim guidance, 14 June 2022 (14 June 2022). Link: https://www.who.int/publications/i/item/who-mpx-immunization-2022.1

WHO: World Health Organization. World mental health report: Transforming mental health for all - executive summary (16 June 2022). Link: https://www.who.int/publications/i/item/9789240050860

News in Brief

Atlantic: The Atlantic. Benjamin Mazer. Long COVID Could Be a 'Mass Deterioration Event' (15 June 2022). Link: https://www.theatlantic.com/health/archive/2022/06/long-covid-chronic-illness-disability/661285/

Bloomberg: Bloomberg News. Madison Muller. WHO Will Rename Monkeypox Virus to Minimize Stigma, Racism (13 June 2022). Link: https://www.bloomberg.com/news/articles/2022-06-13/who-weighs-renaming-monkeypox-virus-to-minimize-stigma-racism

CDC: Centers for Disease Control and Prevention. Long COVID Among Adults in the U.S., Household Pulse Survey (June 22, 2022). Link: https://www.cdc.gov/nchs/covid19/pulse/long-covid.htm

CIDRAP: Center for Infectious Disease Research and Policy. Chris Dall. Study documents rise of antibiotic-resistant typhoid (23 June 2022). Link: https://www.cidrap.umn.edu/news-perspective/2022/06/study-documents-rise-antibiotic-resistant-typhoid

CIDRAP: Center for Infectious Disease Research and Policy. Stephanie Soucheray. WHO says it's investigating monkeypox DNA in semen (15 June 2022). Link: https://www.cidrap.umn.edu/news-perspective/2022/06/who-says-its-investigating-monkeypox-dna-semen

EurekAlert: EurekAlert. COVID-19 pandemic stress impacts ovulation (12 June 2022). Link: https://www.eurekalert.org/news-releases/955089

Global Biodefense: Global Biodefense. Mohammed Rafi Arefin, Carolyn Prouse, and Christopher Reimer. The Bioethics and Biosecurity Aspects of Targeted Wastewater Surveillance (09 June 2022). Link: https://globalbiodefense.com/2022/06/09/the-bioethics-and-biosecurity-aspects-of-targeted-wastewater-surveillance/

Medpage: Medpage Today. Kristina Fiore. Monkeypox Outbreak Strain Has Far More Mutations Than Expected (24 June 2022). Link: https://www.medpagetoday.com/infectiousdisease/generalinfectiousdisease/99408

Medpage: Medpage Today. Joyce Frieden. COVID Vax a Must at the Border; WHO to Rename Monkeypox; Abortions Rose in 2020 (15 June 2022). Link: https://www.medpagetoday.com/infectiousdisease/covid19/99238

Medpage: Medpage Today. Judy George. Who Gets Long COVID? USPSTF Snubs Supplements; Feds Aim to Slash Nicotine (22 June 2022). Link: https://www.medpagetoday.com/infectiousdisease/covid19/99360

Nat Med: Nature Medicine. Paul Adepoju. Africa's outbreak sentinels (17 June 2022). Link: https://www.nature.com/immersive/d41591-022-00064-6/index.html

Nature: Nature. Ewen Callaway. Ancient DNA traces origin of Black Death (15 June 2022; correction 16 June 2022). Link: https://www.nature.com/articles/d41586-022-01673-4

Nature: Nature. Ewen Callaway. How months-long COVID infections could seed dangerous new variants (15 June 2022). Link: https://www.nature.com/articles/d41586-022-01613-2

Nature: Nature. Heidi Ledford. How common is long COVID? Why studies give different answers (20 June 2022). Link: https://www.nature.com/articles/d41586-022-01702-2

Nature: Nature. Michael Marshall. COVID and smell loss: answers begin to emerge (09 June 2022). Link: https://www.nature.com/articles/d41586-022-01589-z

Nature: Nature. Saima May Sidik. New COVID drugs face delays as trials grow more difficult (13 June 2022). Link: https://www.nature.com/articles/d41586-022-01602-5

Nature: Nature. Saima May Sidik. How COVID has deepened inequality — in six stark graphics (22 June 2022). Link: https://www.nature.com/immersive/d41586-022-01647-6/index.html

NYT: New York Times. Apoorva Mandavilli. Scientists Zero In on Origins of the Monkeypox Outbreak (23 June 2022). Link: https://www.nytimes.com/2022/06/23/health/monkeypox-origin-mutations.html

PolicyGenius: PolicyGenius. Logan Sachon. 44% of Americans aren't financially prepared for long COVID (21 June 2022). Link: https://www.policygenius.com/disability-insurance/long-haul-covid-19-survey/

Reuters: Reuters. U.S. CDC confirms evidence of local monkeypox transmission (23 June 2022). Link: https://www.reuters.com/world/us/us-cdc-confirms-evidence-local-monkeypox-transmission-2022-06-23/

SciAm: Scientific American. Rachel Nuwer. Universal Health Care Could Have Saved More Than 330,000 U.S. Lives during COVID (13 June 2022). Link: https://www.scientificamerican.com/article/universal-health-care-could-have-saved-more-than-330-000-u-s-lives-during-covid

Science: Science. Jennifer Couzin-Frankel. Clues to long COVID (16 June 2022). Link: https://www.science.org/content/article/what-causes-long-covid-three-leading-theories

STAT: STATnews. Helen Branswell and Matthew Herper. Comparing the Pfizer and Moderna Covid vaccines for young children (20 June 2022). Link: https://www.statnews.com/2022/06/20/comparing-the-pfizer-and-moderna-covid-vaccines-for-young-children/

STAT: STATnews. Zeenia Framroze. Understanding long Covid will take the lived experiences of long haulers (13 June 2022). Link: https://www.statnews.com/2022/06/13/understanding-long-covid-requires-lived-experiences-long-haulers/

STAT: STATnews. Matthew Herper: FDA authorizes Pfizer and Moderna Covid vaccines for infants, toddlers, and preschoolers (17 June 2022). Link: https://www.statnews.com/2022/06/17/fda-approves-pfizer-and-moderna-covid-vaccines-for-infants-toddlers-and-preschoolers/

STAT: STATnews. Jason Mast. CDC recommends Pfizer, Moderna Covid vaccines for children under (18 June 2022). Link: https://www.statnews.com/2022/06/18/cdc-advisers-endorse-pfizer-moderna-covid-vaccines-for-children-under-5/

STAT: STATnews. Usha Lee McFarling. 'It was stolen from me': Black doctors are forced out of training programs at far higher rates than white residents (20 June 2022). Link: https://www.statnews.com/2022/06/20/black-doctors-forced-out-of-training-programs-at-far-higher-rates-than-white-residents/

STAT: STATnews. Usha Lee McFarling. What will it take to level the playing field for Black residents? (21 June 2022). Link: https://www.statnews.com/2022/06/21/what-will-it-take-to-level-the-playing-field-for-black-residents/

WP: Washington Post. Dino Grandoni. EPA warns toxic 'forever chemicals' more dangerous than once thought (15 June 2022). Link: https://www.washingtonpost.com/climate-environment/2022/06/15/epa-pfas-forever-chemicals/

WP: Washington Post. Frances Stead Sellers. Covid is making flu and other common viruses act in unfamiliar ways (13 June 2022). Link: https://www.washingtonpost.com/health/2022/06/13/covid-flu-rsv-viruses/

WP: Washington Post. Lena H. Sun, Dan Diamond, and Fenit Nirappil. U.S. monkeypox response mirrors early coronavirus missteps, experts say (23 June 2022). Link: https://www.washingtonpost.com/health/2022/06/23/monkeypox-response-biden-administration/